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# IDAHO AND MONTANA.

## SIGHTS AND SCENES

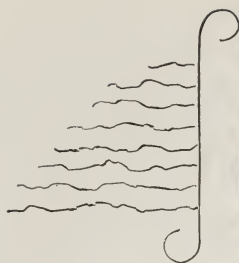
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# FOR THE TOURIST.

C. S. MELLEN,                      E. L. LOMAX,  
GEN'L TRAFFIC MANAGER,      GEN'L PASSENGER AGENT,  
OMAHA, NEB.





Sights *AND*  
Scenes  
IN  
IDAHO *AND* MONTANA  
for Tourists.

Compliments of the SECOND EDITION.  
Passenger Department,

Union Pacific System.

Omaha, Neb.

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By E. L. LOMAX, General Passenger Agent,  
Union Pacific System.  
Omaha, Neb.

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Now operates this class of service on the Union Pacific  
and connecting lines.

PULLMAN PALACE CAR RATES BETWEEN	Double Berths.	Drawing Room.
New York and Chicago.....	\$ 5.00	\$ 18.00
New York and St. Louis.....	6.00	22.00
Boston and Chicago.....	5.50	20.00
Chicago and Omaha or Kansas City.....	2.50	9.00
Chicago and Denver.....	6.00	21.00
St. Louis and Kansas City.....	2.00	7.00
St. Louis and Omaha.....	2.50	9.00
Kansas City and Cheyenne.....	4.50	16.00
Council Bluffs, Omaha or Kansas City and Denver.....	3.50	12.00
Council Bluffs or Omaha and Cheyenne.....	4.00	14.00
Council Bluffs, Omaha or Kansas City and Salt Lake City...	8.00	28.00
Council Bluffs, Omaha or Kansas City and Ogden.....	8.00	28.00
Council Bluffs, Omaha or Kansas City and Butte.....	8.50	32.00
Council Bluffs, Omaha or Kansas City and Portland.....	13.00	50.00
C. Bluffs, Omaha or K. City and San Francisco or Los Angeles	13.00	50.00
Cheyenne and Portland.....	10.00	38.00
Denver and Leadville.....	2.00	.....
Denver and Portland.....	11.00	42.00
Denver and Los Angeles.....	11.00	42.00
Denver and San Francisco.....	11.00	42.00
Pocatello and Butte.....	2.00	6.00

For a Section, Twice the Double Berth Rates will be charged.

The Private Hotel, Dining, Hunting and Sleeping Cars of the Pullman Company will accommodate from 12 to 18 persons, allowing a full bed to each, and are fitted with such modern conveniences as private, observation and smoking rooms, folding beds, reclining chairs, buffets and kitchens. They are "*just the thing*" for tourists, theatrical companies, sportsmen, and private parties. The Hunting Cars have special conveniences, being provided with dog-kennels, gun-racks, fishing-tackle, etc. These cars can be chartered at following rates per diem (the time being reckoned from date of departure until return of same, unless otherwise arranged with the Pullman Company):

## Less than Ten Days.

	per day.		per day.
Hotel Cars.....	\$ 50.00	Private or Hunting Cars.....	\$ 35.00
Buffet Cars.....	45.00	Private Cars with Buffet....	30.00
Sleeping Cars.....	40.00	Dining Cars.....	30.00

**Ten Days or over,** \$5.00 per day less than above. Hotel, Buffet, or Sleeping Cars can also be chartered for continuous trips without lay-over between points where extra cars are furnished (cars to be given up at destination), as follows:

Where berth rate is.....	\$1.50,	car rate will be.....	\$35.00
" " ".....	2.00,	" " " ".....	45.00
" " ".....	2.50,	" " " ".....	55.00

For each additional berth rate of 50 cents, car rate will be increased \$10.00.

Above rates include service of polite and skillful attendants. The commissariat will also be furnished if desired. Such chartered cars must contain not less than 15 persons holding full first-class tickets, and another full fare ticket will be required for each additional passenger over 15. If chartered "per diem" cars are given up *en route*, chartering party must arrange for return to original starting point free, or pay amount of freight necessary for return thereto. Diagrams showing interior of these cars can be had of any agent of the Company.

## PULLMAN DINING CARS

are attached to the **Council Bluffs and Denver Vestibuled Express**, running daily between **Council Bluffs and Denver**, and to "**The Limited Fast Mail**," running daily between **Council Bluffs and Portland, Ore.**

## MEALS.

All trains, except those specified above (under head of Pullman Dining Cars), stop at regular eating stations, where first-class meals are furnished, under the direct supervision of this Company, by the Pacific Hotel Company. Neat and tidy lunch counters are also to be found at these stations.

## BUFFET SERVICE.

Particular attention is called to the fine Buffet Service offered by the Union Pacific System to its patrons. Pullman Palace Buffet Sleepers now run on trains Nos. 1, 2, 201, and 202.

## SIGHTS AND SCENES IN IDAHO AND MONTANA.

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Idaho is an Indian word signifying "Gem of the Mountains," a very appropriate term for the queenly young Territory. It is 410 miles long, and 257 wide in the extreme south, and has an area of over 55,000,000 acres. There are 18,400,000 acres classed as mountainous; 15,000,000 agricultural lands; 7,000,000 acres of forests; 25,000,000 acres of grazing lands, and 600,000 acres of lakes. This may be well called an imperial domain, consisting, as it does, of 84,000 square miles.

Idaho is in the same latitude as France, Switzerland, and portions of Italy, Spain, and Portugal. It is subject to oceanic influences very similar to those countries, and necessarily has a somewhat similar climate. All this region is near enough to the Pacific Ocean to be very noticeably affected by its currents.

The Union Pacific Railway will sell at greatly reduced rates during the summer season of 1889, a series of excursion tickets called "Shoshone Tours," covering the principal points in Idaho and Montana, using Pocatello and Shoshone, Idaho, as central points. Stop-over privileges will be given within the limitation of the tickets. Tickets will be good thirty days from date of sale.

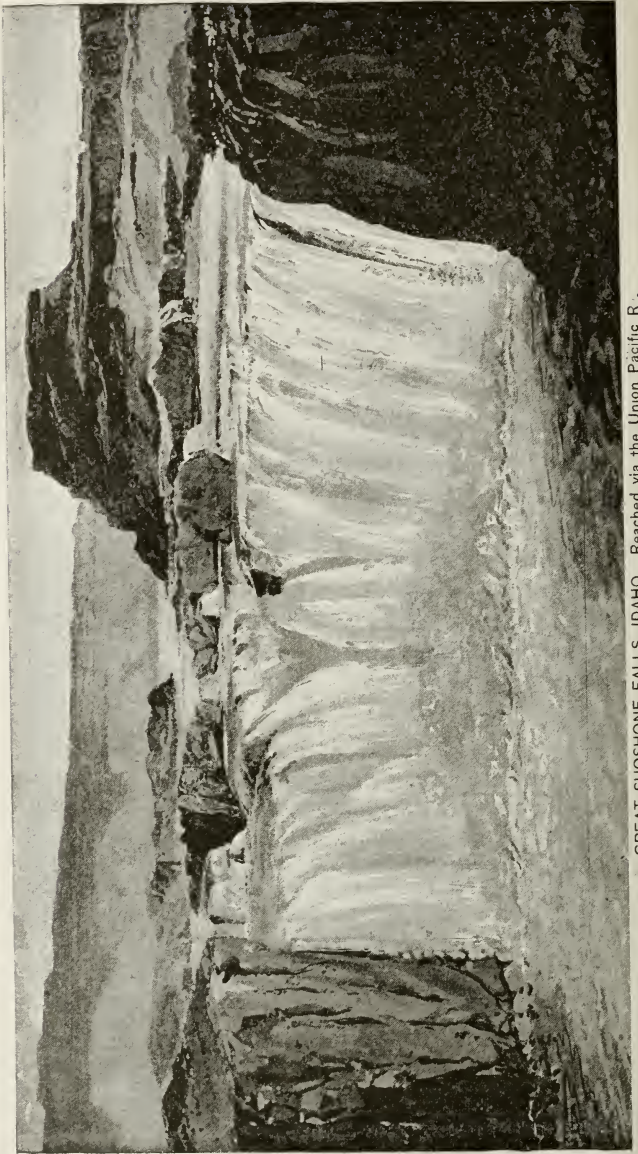
First Shoshone Tour: From Pocatello to Great Shoshone Falls and return to Shoshone Station; from Shoshone Station to Hailey and Guyer Hot Springs and return to Shoshone Station, and from Shoshone Station to Boise City and return to Pocatello.

Second Shoshone Tour: From Pocatello to Soda Springs and return.

Third Shoshone Tour: From Pocatello, via Beaver Cañon, to Yellowstone National Park and return.

Fourth Shoshone Tour: From Pocatello to Butte and Helena and return.

In doing the circuit of these tours, the traveler will



GREAT SHOSHONE FALLS, IDAHO. Reached via the Union Pacific R.



find it most advantageous to use Pocatello as a central point. It is a railroad town of 2,000 inhabitants, and lacks any particular charm in scenery or environment, but it is a very convenient point for headquarters while "doing" Idaho and Montana. The Pacific Hotel at the station will be found first-class in every particular. At Pocatello, connections are made with Montana on the north, south to Ogden, and east and west on the Portland Main Line of the Union Pacific.

The Pocatello town-site bill passed Congress September 1, 1888, ratifying the treaty of May 27, 1887. A bill was also passed February 23, 1889, ratifying the treaty of May 14, 1880, whereby 350,000 acres of land were ceded to the public domain. This tract covers the southern portion of the Fort Hall Reservation, taking in McCammon Station on the Union Pacific Railway. This magnificent tract is now ready for Government survey, and, when thrown open to settlers, will furnish fine homesteads for thousands of people.

The first tour is from Pocatello to Shoshone Station, and from there by stage to GREAT SHOSHONE FALLS, the wonder of this continent.

### GREAT SHOSHONE FALLS.

It is a three hours' run from Pocatello to Shoshone Station. Not very promising looks the small but energetic town, and rather desolate the miles of sagebrush that stretch away to the southward, and it is twenty-five miles from the railway track to the Falls. The method of travel is either by stage-coach or private conveyance. Good teams there are in abundance, and the distance is made in three and one-half hours. But after one has driven the allotted time, there are no signs of the Falls, the same desert stretches around, and a purple mountain chain in the far south seems to be the ultimate goal. Within the last mile or so, a few lava ridges have sprung up, and passing suddenly around one of these, we find ourselves in a natural gate, and there below, a sheer 1,200 feet, lies the Snake river, and then we hear, for the first time, the music of the Falls. A steep road brings us down to the ferry. The water here, 200 yards above the Falls, is over 200 feet deep, and of a greenish color. The ferry is a very substantial affair

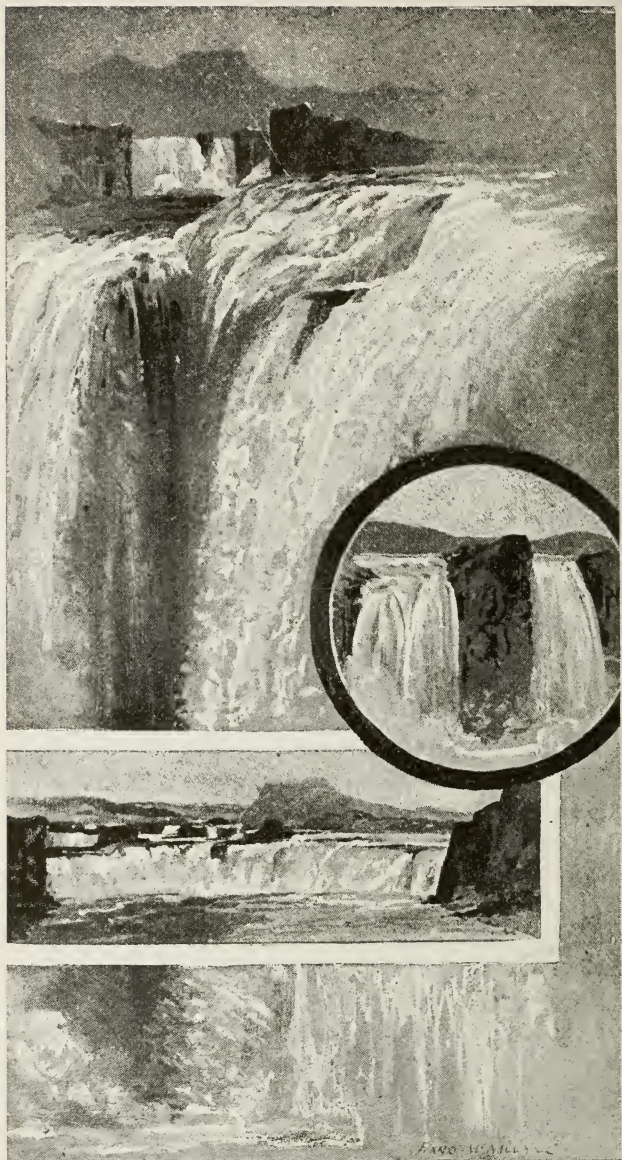
worked by an under-water wire cable, and another safety wire cable above, reaching from bank to bank. The cozy hotel is all that could be desired in *cuisine* and *menage*, and, at the very door, one stands and looks down at the falls. Shoshone differs from every other water-fall in this or the old country. It is its lonely grandeur that impresses one so deeply; all of the other historic places have the adjuncts of civilization, and one is almost overshadowed by a city while in their presence. The encroachments of men have taken away from the charm of nature. But Shoshone is as lonely as when first this rushing river sprang through those towering cañon walls. The height of the chasm above and below the Falls varies from 1,050 to 1,200 feet, and there is eighteen miles of this gorge. The fall proper measures 950 feet across, and the Bridal Veil, which is only a few yards back of the great fall, 125 feet. Down through this appalling rent, the river plunges, takes a flying leap of eighty-two feet at first, and then falling thunderously 210 feet into the boiling basin below. It is three miles up the river to Twin Falls; six miles to Blue Lake, a charming bit of water seventy-five feet deep and as clear as crystal; one-half mile to the Vaulted Dome; one-half mile to the Locomotive Cave; a mile and a quarter to the lower Cascade Fall; and one and one-half miles to the Devil's Corral. The hotel is situated on the bank overlooking the Great Falls not twenty feet from the brink, and affords a view of Bridal Veil, Bridal Train, Natural Mill Race Falls, Eagle Rock, and Bell's Island.

One sunset at this enchanted spot will never be forgotten. The day began to die, and then came a wonderful display. As the sun went down, the sky flushed into manifold colors—there were bars of violet, crimson, and delicate shadings of pink and salmon. For a few moments, the sun hung over the great chasm below the Falls, flooding the majestic cañon walls with warm glows, and lighting up the Falls with surpassing brilliancy; the river flowed beneath, restless and seething after its mighty conflict. Down the red orb went behind the western cliff, and great flame-bursts and banners, many-hued, witnessed his departure. There was a pause—and then the pageant dissolved; cool amber grays crept across the dome and deepened into shadow; another moment

the day was done, and starlight upon us. But at night, the place is haunted. The wave circles of sound are recurrent—at least two or three are—that one especially which resembles the thunder of a railway train at full speed. It will come roaring by and die away only to return again and again. The mystery and majesty of this great organ volume of sound are, at times, appalling. Remember, that the one solid theme of the thunder of the Falls never ceased—that was permanent and unvarying—but upon this monotonous theme were played a thousand variations. Once there was a steady tramp, as of a battalion of soldiers marching strongly and steadily together. This died away, and then two voices were heard, very far off, but distinct as if engaged in angry altercation; these sank down and the room became full of vague and shadowy whisperings, then the refrain would break out: clinkety-clank! clinkety-clank! ca-den, ca-den, boom, boom—boom, boom, boom (marching time). It was too nerve-trying, and we opened the window wide; the moonlight fell full on the falls and lingered on the rent and ghastly sides of the cañon walls. A faint recurrence could be detected in the heavy bass movement of the symphony, if one may so call it; but otherwise, there was nothing more than the powerful swish and roar of the water; but many a time through the night we heard those haunting voices, and weird, uncanny sounds.

Across the deep, green water we go again in safety; up the narrow road along the face of the cliff, and once more stand in the magnificent portal and look back. Serenely tower the cañon walls in the still summer air; placid and calm the river below; the thunder of the cataract heard dimly around to the right; golden sunshine falling tenderly on the torn and gashed outline of mountain wall and dreaming river—a dozen steps through the sharp defile, and the picture vanishes; there are no mighty deeps—no river, no gleam of falling splendor—the waste of the desert and the dreary miles of sage-brush creep away to the dim horizon on every side—addio, Shoshone, addio.

The character of the country through which the railway traveler passes in Southern and Eastern Idaho is adapted to repel rather than attract. The vast stretches of lava fields and sage-brush plains become monotonous in the extreme; yet amid Idaho's placid



GREAT SHOSHONE FALLS, IDAHO.  
Reached via the Union Pacific Ry.



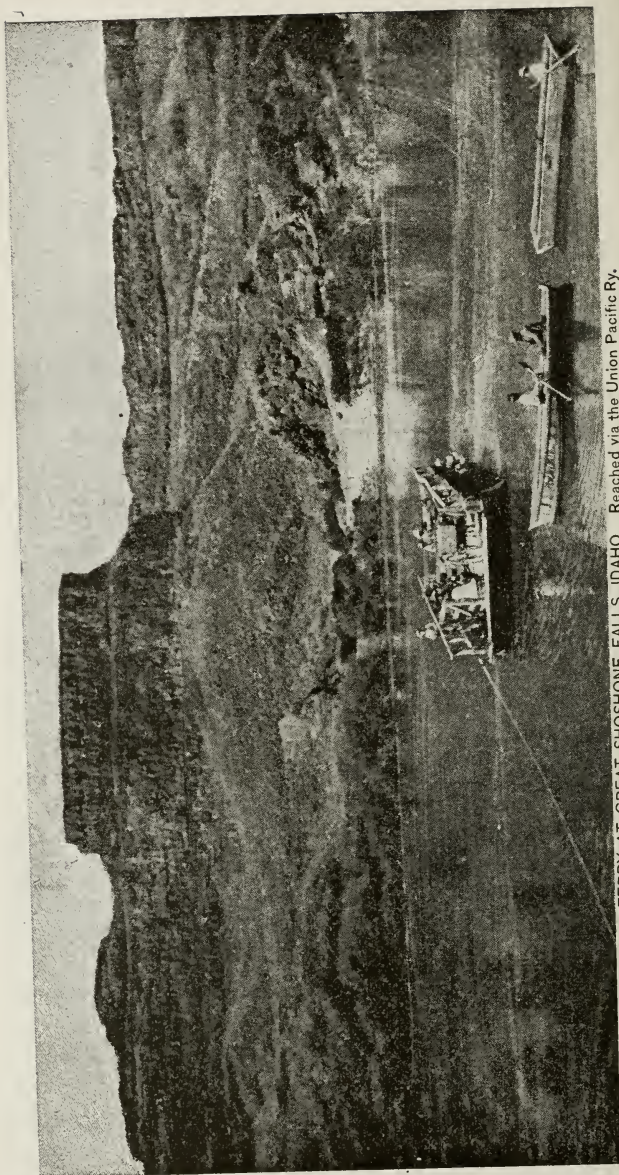
lakes, rushing rivers, and rugged mountains, may be found many a romantic scene. Rocks piled mountain high, cañons a thousand feet deep, through which streams rush, and roar, and foam, cataracts leaping from rock to rock, tossing their spray aloft, somber forest scenes beneath towering trees, where foliage is so dense as to leave a twilight dimness at mid-day—these are some of the characteristics of the landscapes of imperial Idaho. Chief among all, however, are the Great Shoshone Falls of Snake river.

“The three great falls of America,” says Clarence King, “Niagara, Shoshone, and Yosemite, all happily bearing Indian names, are as characteristically different as possible. There seems little left for a cataract to express.”

The Shoshone Falls have been called the Niagara of the West. The title is not a fortunate one, as these falls have a superior scenery peculiarly their own. They are higher than Niagara, though during most of the year there is less volume of water. Probably the best description is that written by Mr. King himself, from which we make copious extracts without further apology. “A few miles in front, the smooth surface of the plain was broken by a rugged zigzag line of black, which marked the further wall of the Snake Cañon. A dull, throbbing sound greeted us. Its pulsations were deep, and seemed to proceed from the ground beneath our feet. Leaving the cavalry to bring up the wagon, my friend and I galloped on, and were quickly upon the edge of the cañon wall.

“We looked down into a broad, circular excavation, three-quarters of a mile in diameter, and nearly 1,000 feet deep. East and north, over the edges of the cañon, we looked across miles and miles of the Snake Plain, far on to the blue boundary mountains. The wall of the gorge opposite us, like the cliff at our feet, sank in perpendicular bluffs, nearly to the level of the river, the broad excavation being covered by rough piles of black lava and rounded domes of rock. A horizon as level as the sea; a circling wall, whose sharp edges were here and there battlemented in huge, fortress-like masses; a broad river, smooth and unruffled, flowing quietly in the middle of the scene, and then plunging into a labyrinth of rocks, tumbling over a precipice 220 feet high, and moving westward in a still, deep current, to disappear behind a black promontory.





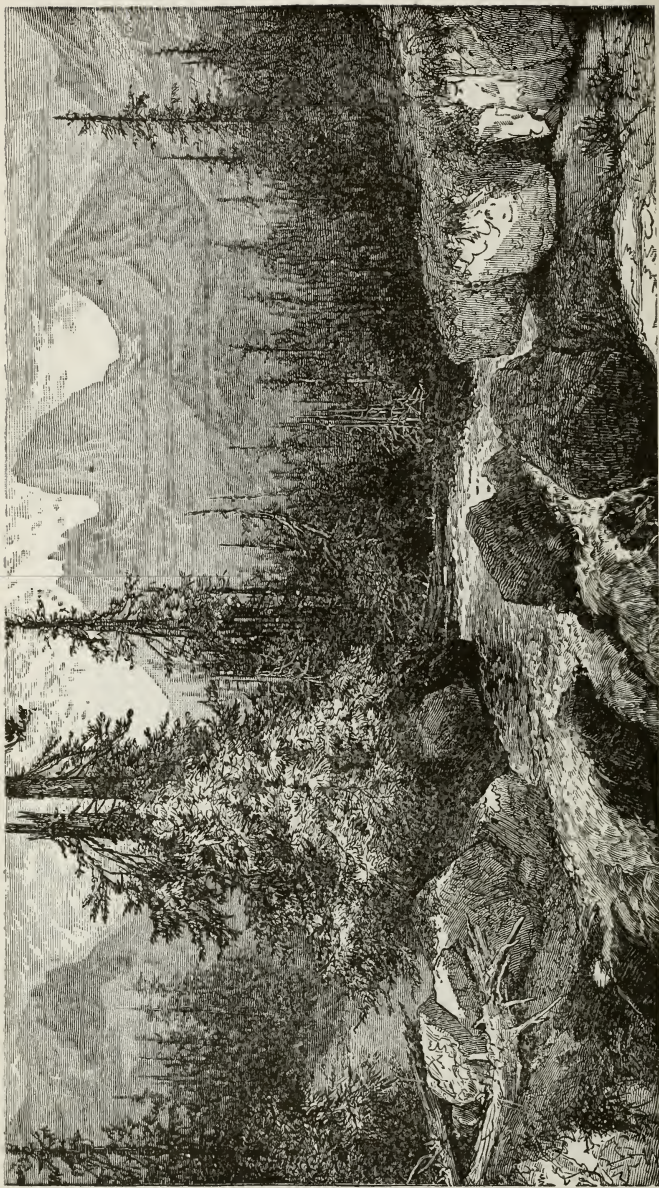
FERRY AT GREAT SHOSHONE FALLS, IDAHO. Reached via the Union Pacific Ry.

“It is a strange, savage scene—a monotony of pale blue sky, olive and gray stretches of desert, frowning walls of jetty lava, deep beryl-green river stretches, reflecting here and there the intense solemnity of the cliffs, and in the centre a dazzling sheet of foam. In the early morning light, the shadows of the cliffs were cast over half the basin, defining themselves in sharp outline here and there on the river. Upon the foam of the cataract, one point of the rock cast a blue shadow. Where the river flowed around the western promontory, it was wholly in shadow and of a deep sea-green. A scanty growth of trees fringed the brink of the lower cliffs overhanging the river. Dead barrenness is the whole sentiment of the scene. The mere suggestion of trees clinging here and there along the walls serves rather to heighten than to relieve the forbidding gloom of the place. Nor does the flashing whiteness where the river tears itself among the rocky islands, or rolls in spray down the cliff, brighten the aspect. In contrast with its brilliancy, the rocks seem darker and more wild.

“The descent of 1,000 feet from our standpoint to the level of the river above the falls has to be made by a narrow winding path among rough ledges of lava. We were obliged to leave our wagon at the summit, and pack down the camp equipment and photographic apparatus upon carefully-led mules. By mid-day we were comfortably camped on the margin of the left bank, just above the brink of the falls. My tent was pitched upon the edge of the cliff directly overhanging the rapids. From my door, I looked over the cataract, and, whenever the veil of mist was blown aside, could see for a mile down the river.

“The lower half of the cañon is excavated in a volcanic formation of red and gray rock. It is over this material that the Snake falls. Above the brink, the whole breadth of the river is broken by a dozen small volcanic islands, which the water has carved into fantastic forms; rounding some into low domes, sharpening others into mere pillars, and now and then wearing into deep caves. At the very brink of the fall, a few twisted evergreens cling with their roots to the rock, and lean over the abyss of foam with something of that air of fatal fascination which is apt to take possession of men. Under the influence of the cool shadow of cliffs and pine, and constant percolating of





THE THREE TETONS, IDAHO. Reached via the Union Pacific Ry.

surface waters, a rare fertility is developed in the ravines opening upon the cañon shore. A luxuriance of ferns and mosses, an almost tropical wealth of green leaves and velvety carpeting line the banks. There are no rocks at the base of the fall. The sheet of foam plunges almost vertically into a dark beryl-green lake-like expanse of river

“Immense volumes of foam roll up from the cataract base, and whirling about in eddy winds, rise often a thousand feet in the air. When the wind blows down the cañon, a gray mist obscures the river for half a mile, and when, as is usually the case in the afternoon, the breezes blow eastward, the foam cloud curls over the brink of the fall and hangs like a veil over the upper river. On what condition depends the height to which the foam cloud rises from the base of the fall, it is apparently impossible to determine. Without the slightest wind, the cloud of spray often rises several hundred feet above the cañon wall, and again, with apparently the same conditions of river and atmosphere, it hardly reaches the brink. Incessant roar, re-enforced by a thousand echoes, fills the cañon. Out of this monotone, from time to time, rise strange wild sounds, and now and then may be heard a slow, measured beat, not unlike the recurring fall of breakers. From the white front of the cataract, the eye constantly wanders up to the black, foaming parapet of lava. Angular bastions rise sharply from the general level of the wall, and here and there isolated blocks, profiling upon their sky line, strikingly recall *barbette* batteries. To goad one’s imagination up to the point of perpetually seeing resemblances of everything else in the forms of rock, is the most vulgar vice of travelers; to refuse to see the architectural suggestions upon Snake Cañon, however, is to administer a flat snub to one’s fancy. The whole edge of the cañon is deeply cleft in vertical crevices. The actual brink is usually formed of irregular blocks and prisms of lava, poised upon their ends in an unstable equilibrium, ready to be tumbled over at the first leverage of the frost. Hardly an hour passes without the boom of one of those rock masses falling upon the ragged *débris* piles below.

“Night is the true time to appreciate the full force of the scene. I lay and watched it many hours. The broken rim of the basin profiled itself upon a mass

of drifting clouds, when torn openings revealed gleams of pale moonlight and bits of remote sky trembling with misty stars. Intervals of light and blank darkness hurriedly followed each other. For a moment the black gorge would be crowded with forms. Tall cliffs, ramparts of lava, the rugged outlines of islands huddled together on the cataract's brink, faintly luminous foam breaking over black rapids, the swift white leap of the river, and a ghostly, formless mist through which the cañon walls and far reach of the lower river were veiled and unveiled again and again. A moment of this strange picture, and then a rush of black shadow, when nothing could be seen but the breaks in the clouds, the basin rim, and a vague white centre in the general darkness. \* \*

"The cliffs around the upper cataract, or "Twin Falls," are inferior to those of the Shoshone. While the level of the upper plain remains nearly the same, the river constantly deepens the channel in its westward course. In returning from the upper falls I attempted to climb along the very edge of the cliff, in order to study carefully the habits of the basalt, but I found myself in a labyrinth of side crevices, which were cut into the plain from a hundred to a thousand feet back from the main wall. These recesses were usually in the form of an amphitheater, with black walls 200 feet high, and a bottom filled with immense fragments of basalt rudely piled together."

The Hon. J. M. Goodwin of Salt Lake City, the well-known brilliant journalist, has described his impressions of Shoshone Falls so vividly and with such dramatic vigor, that his sketch is reproduced herewith. It is a fitting tribute to the "glory and the grandeur of Shoshone Falls," as Judge Goodwin aptly terms his beautiful description:

"The lava beds of Idaho are a marked feature of that Territory. Starting near the eastern boundary they extend southwesterly for a long distance, and are from 300 feet to 900 feet in depth. This mass was once a river of molten fire, the making of which must have succeeded a convulsion of Nature more terrible than any ever witnessed by mortals, and long years must have passed before the awful fiery mass was cooled. To the east of the source of the lava flow, the Snake river bursts out of the hills, becoming almost at once a sovereign river, and flowing at first



southwesterly and then bending westerly, cuts through the lava fields nearly in the center of the Territory, reckoned from east to west, and about forty miles north of its southern border, and thence flowing with great curves, merges finally with the Columbia. The two rivers combined make one of the chief waterways of the continent, and here and there take on pictures of great beauty. But there is only one pathway to the Great Shoshone Falls, and that is from Shoshone Station, on the Oregon Short Line Division of the Union Pacific.

“The Great Falls are twenty-six miles due south from the station, and may be reached in three hours by stage or private conveyance. Shoshone Station is a busy, wide-awake railway town of 1,000 people; it is 1,200 miles distant from Omaha; 1,427 from Kansas City; 788 from Denver; 298 from Salt Lake; 261 from Ogden; and 624 miles from Portland, Oregon.

“Never anywhere else was there such a scene; never anywhere else was so beautiful a picture hung in so rude a frame; never anywhere else, on a background so forbidding and weird, were so many glories clustered.

“Around and beyond, there is nothing but the desert—sere, silent, lifeless—as though Desolation had builded there everlasting thrones to Sorrow and Despair.

“Away back in remote ages, over the withered breast of the desert, a river of fire, 100 miles wide and 400 miles long, was turned. As the fiery mass cooled, its red waves became transfixed, and turned black, giving to the double-desert an indescribably blasted and forbidding face.

“But while this river of fire was in flow, a river of water was fighting its way across it, or has since made war and forged out for itself a channel through the mass. This channel looks like the grave of a volcano that had been robbed of its dead.

“But right between its crumbling and repellent walls, transfiguration appears. And such a picture! A river as lordly as the Hudson or the Ohio, springing from the distant snow-crested Tetons with waters transparent as glass, but green as emerald, with majestic flow and ever-increasing volume, sweeps on until it reaches this point where the display begins.

"Suddenly, in different places in the river-bed, jagged rocky reefs are upheaved, dividing the current into four rivers, and these, in a mighty plunge of eighty feet downward, dash on their way. Of course the waters are churned into foam, and roll over the precipice white as are the garments of the morning when no cloud obscures the sun. The loveliest of these falls is called "The Bridal Veil," because it is made of the lace which is woven with a warp of falling waters and a woof of sunlight. Above this and near the right bank, is a long trail of foam, and this is called "The Bridal Trail." The other channels are not so fair as the one called "The Bridal Veil," but they are more fierce and wild, and carry in their ferocious sweep more power.

"One of the reefs which divides the river in mid-channel runs up to a peak, and on this a family of eagles have, through the years, may be through centuries, made their home and reared their young, on the very verge of the abyss and amid the full echoes of the resounding roar of the falls. Surely the eagle is a fitting symbol of perfect fearlessness, and of that exultation which comes with battle clamors.

"But these first falls are but a beginning. The greater splendor succeeds. With swifter flow, the startled waters dash on, and within a few feet take their second plunge in a solid crescent, over a sheer precipice, 210 feet to the abyss below. On the brink there is a rolling crest of white, dotted here and there, in sharp contrast, with shining eddies of green, as might a necklace of emerald shimmer on a throat of snow, and then the leap and fall.

"Here more than foam is made. Here the waters are shivered into fleecy spray, whiter and finer than any miracle that ever fell from an India loom; while from the depths below, an everlasting vapor rises—the incense of the waters to the water's God. Finally, through the long, unclouded days, the sun sends down his beams, and to give the startling scene its growing splendor, wreathes the terror and the glory in a rainbow halo. On either sullen bank the extremities of its arc are anchored, and there, in its many-colored robes of light, it lies outstretched above the abyss like wreaths of flowers above a sepulchre. Up through the glory and terror an everlasting roar ascends, deep toned as in the voice of fate, a diapason like that the rolling ocean

chants when his eager surges come rushing in to greet and fiercely woo an irresponsible promontory.

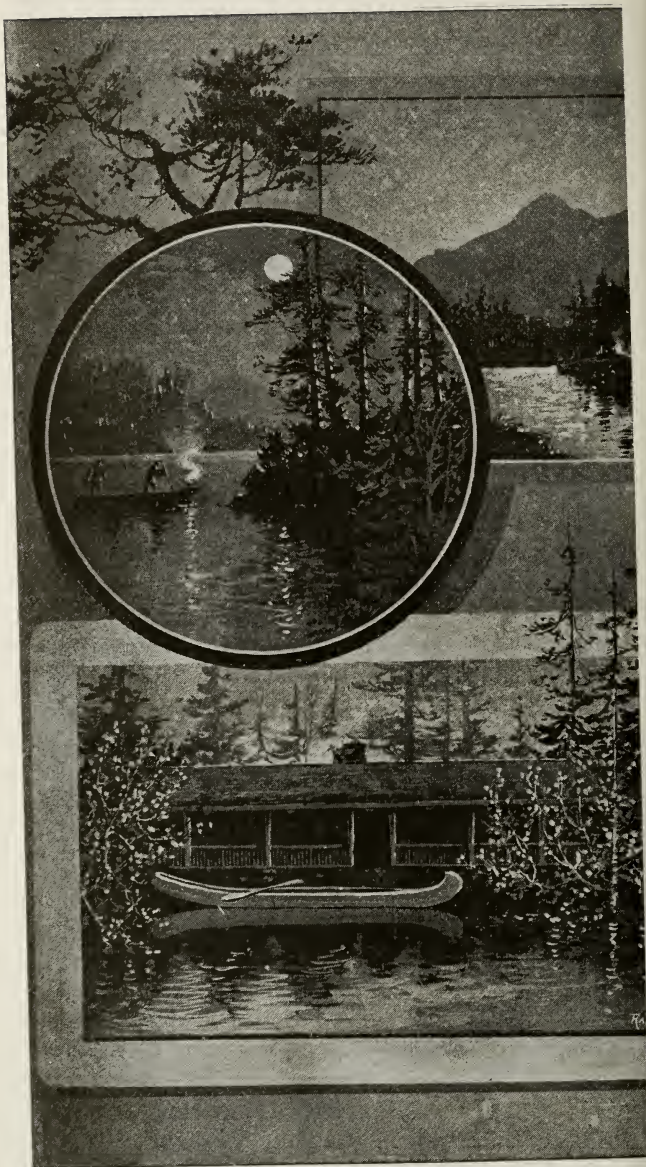
“But to feel all the awe and to mark all the splendor and power that comes of the mighty display, one must climb down the deep descent to the river’s brink below, and pressing up as nearly as possible to the falls, contemplate the tremendous picture. There, something of the energy that creates that endless panorama is comprehended; all the deep throbbings of the mighty river’s pulses are felt, all the magnificence is seen.

“In the reverberations that come of the war of waters, one hears something like God’s voice; something like the splendor of God is before his eyes; something akin to God’s power is manifesting itself before him, and his soul shrinks within itself, conscious, as never before, of its own littleness and helplessness in the presence of the workings of Nature’s immeasurable forces.

“Not quite so massive is the picture as is Niagara, but it has more lights and shades and loveliness, as though a hand more divinely skilled had mixed the tints, and with more delicate art had transfixed them upon that picture suspended there in its rugged and sombre frame.

“As one watches, it is not difficult to fancy that, away back in the immemorial and unrecorded past, the angel of love bewailed the fact that mortals were to be given existence in a spot so forbidding, a spot that, apparently, was never to be warmed with God’s smile, which was never to make a sign through which God’s mercy was to be discerned; that then Omnipotence was touched, that with His hand He smote the hills and started the great river in its flow; that with His finger He traced out the channel across the corpse of that other river that had been fire, mingled the sunbeams with the raging waters, and made it possible in that fire-blasted frame of *scoria* to swing a picture which should be, first to the red man and later to the pale races, a certain sign of the existence, the power, and the unapproachable splendor of Jehovah.

“And as the red man, through the centuries, watched the spectacle, comprehending nothing except that an infinite voice was smiting his ears, and insufferable glories were blazing before his eyes; so, through the centuries to come, the pale races will stand upon the shuddering shore and watch, experiencing a mighty



APPROACH TO YELLOWSTONE NATIONAL PARK.  
Reached via the Union Pacific Ry.

1. Ford of the Snake River.
2. Spearing Trout, Snake River.
3. Hunter's Cabin, Henry's Lake.



impulse to put off the sandals from their feet, under an overmastering consciousness that the spot on which they are standing is holy ground.

“There is nothing elsewhere like it, nothing half so weird, so beautiful, so clothed in majesty, so draped with terror, nothing else that awakens impressions at once so startling, so winsome, so profound. While journeying through the desert, to come suddenly upon it, the spectacle gives one something of the emotions that would be experienced to behold a resurrection from the dead. In the midst of what seems like a dead world, suddenly there springs into irrepressible life something so marvelous, so grand, so caparisoned with loveliness and irresistible might, that the head is bowed, the strained heart throbs tumultuously, and the awed soul sinks to its knees.”

### THE BLUE LAKES (Shoshone Falls).

While Shoshone Falls itself is full of varied and never ceasing interest and wonder, its environments afford much to attract the tourist or the student of nature. One can spend a profitable day examining the peculiar lava formation as exhibited in the rugged walls of the Grand Canyon of the Snake River, both above and below the Main Falls, where they leap into the seething abyss 220 feet below the great precipice. Going up the channel three miles are found the Twin Falls, rushing through a gorge, walled in by the lava and divided into two narrow streams, which shoot over the face of the rugged rocks side by side, and, with a mighty roar, leap 180 feet downward in one desperate plunge into the mysterious surging depths below. All around is seeming chaos, and such a weird, powerful, gigantic presence surrounds the visitor that he is overcome with awe, while in close proximity to either the Main Falls or the Twin Falls.

So that when filled by this inexpressible majesty and power, and almost dazed by the constant roar and rush of waters, it is a relief to turn toward a peaceful, quiet little spot known as the BLUE LAKES, about four miles below the falls. These little lakes are on the north bank of Snake River, and are reached by a wagon road, by making a slight detour from the stage line to the falls. The lakes, and several hundred acres of land adjoining, are the property of I. B. Perrine, (of Shoshone) who has improved the place by



stocking the lakes with speckled trout, and by planting several thousand peach and other fruit trees. For trout-fishing few better points can be found. The waters are perfectly placid and still, shut in, as they are, by a semi-circular amphitheatre near the bank of the Snake River, several hundred feet below the level of the plains on either side. After a row on the lake and an exciting time landing the finny tribe, one's appetite begins to make demands—and what better lunch could be served than a bowl of fresh Idaho strawberries and cream, during the latter part of April or in May; or, later in the season, a plate of peaches or juicy melon, from the garden close by? The orchard contains about four thousand peach trees alone, besides grapes, apples, and small fruits. These are now bearing. Added to the beauty of the lakes, the boating, the fishing, the unfailing system of irrigation, which produces such wonderful results in the desert places, all these will serve to interest and instruct the traveler who visits the Blue Lakes.

An extensive canal system has been proposed to irrigate the vast plains between the Oregon Short Line and Shoshone Falls, but at present the Blue Lakes are fed by subterranean streams underneath the lava beds, and these streams furnish the water to irrigate the farm at the lakes, which is truly an oasis in the desert.

Returning to Shoshone Station, the train is taken to Hailey, and the famous Hot Springs visited.

### HAILEY.

Hailey is situated just where Quigley and Croy gulches unite with the Wood River Valley, the junction affording a fine view in four directions, embracing well-cultivated ranches, and ending with the foot-hills. The climate is mild and even, and the roads, stretching away on all sides, are perfect. The mines at Hailey possess much of interest to the tourist, and a good hotel furnishes accommodations.

One and a half miles from Hailey are the famous Hailey Hot Springs. The ride or walk thither is very pleasant, leading through a picturesque little valley, and the location, in a lovely glen in sight of several rich mines, is very pleasing. Large volumes of water of a temperature of 150° and containing sulphate of soda, iron, magnesia, sulphur, and other desirable

ingredients, are found in scores of springs. Commodious swimming-baths are provided. Many patients have gone to these with chronic cases, believed to be hopeless, of neuralgia, paralysis, dyspepsia, inflammatory or mercurial rheumatism, and other complaints for which the Arkansas springs are considered a specific, and after a few months of bathing and drinking have left completely restored. The baths are also very popular with those in good health, thousands visiting them annually for the delightfully exhilarating effects of a plunge.

The largest hospital of Alturas county is near. A two-mile drive from Hailey takes the tourist to the beautiful valley of Croy Gulch, with an altitude of about 5,300 feet. The Bolton Hot Springs, five miles from Hailey, are also very efficacious in relieving and curing rheumatism. Bellevue, five miles south of Hailey, is a pretty little town.

#### KETCHUM.

Ketchum, a rapidly growing town of about 2,000 to 3,000 people, lies thirteen miles north of Hailey, and is beautifully situated at the head of the Wood River Valley. At this point, Wood river is as clear as crystal, and rich in the finest of mountain trout. The vicinity surrounding affords good hunting, and elk and bear abound. The mines round about Ketchum are large, and will well repay inspection. The Guyer Hot Springs, two miles by stage from Ketchum, are noted for their medicinal waters, and are of high repute throughout the neighboring country. There are many objects of interest, both for the tourist and pleasure-seeker, in and about Ketchum. The scenery is beautiful, and the climate all that could be desired.

#### GUYER HOT SPRINGS.

This romantic little mountain resort is situated about two miles from Ketchum and seventy miles from Shoshone. Regular hacks run to and fro from the springs, in connection with the branch trains. The springs are comparatively unknown outside of Idaho, but are destined to become famous for the well-known medicinal qualities of the waters and the great natural beauty of the place. The springs, about fifteen in number, gush out from the mountain-side intensely hot, and are conveyed a short distance by pipe to the bath-house, where there are two large

plunge baths and quite a number of single rooms with tubs. The waters are good for all nervous complaints, rheumatism, skin and blood affections. This place is much resorted to by tourists and invalids. It is a beautiful, quiet mountain retreat. The accommodations for guests are first-class, and in addition to the hotel, there are bath-houses, bowling-alleys, croquet and tennis grounds, swings, band-stands, and dancing-platforms—everything, in short, to make a visit pleasant.

## BOISE CITY AND RETURN TO POCA TELLO.

From Shoshone Station, passing westward, the next town of importance is Boise City, which is now reached from Nampa on the Union Pacific Railway, via the Idaho Central. Boise City is nineteen miles from Nampa, and has an elevation of 2,840 feet. It has a population of about 6,000, good hotel accommodations, and is a point of interest to the tourist. Boise City is the largest, wealthiest, and most attractive town in the Territory, with good schools and pleasant homes. It is in the center of the Idaho fruit-belt. A great many medicinal springs are to be found within the immediate neighborhood of Boise City, easy of access, and possessing many charms, both of water and scenery.

It is over half a century since Fort Boise was established on the west side of Snake river by the Hudson Bay Fur Company. It was only a trading post for the trappers, and was so called because of the Boise (wooded) river emptying into the Snake opposite that point. All traces of the French-Canadian trappers who caught otter, beaver, and other animals in those days have passed away; but the country is still marked by names given by them to the streams, mountains, and localities.

Climate and general aspect have not changed, except as the savage inhabitants and wild beasts have been driven back by the influx of civilization, which has changed the broad acres into fruitful fields and orchards, dotted the plains with enterprising and thrifty towns, cities, and homes, and is fast making this land one of the garden spots of the world. With this civilization came those great aids of wealth and progress, the railways and telegraphs, exerting an influence beyond calculation.

The first settling of Idaho came from the finding of gold, and the stampede which followed to the Oro Fino country in 1861 and 1862. This mining excitement in the north caused prospecting southward, and in the following year Boise Basin and the Owyhee countries had their mining excitements, bringing hundreds of prospectors from the camps of California, Nevada, and other districts.

The site of Boise City offered such favorable inducements for a town that it at once became a trading point and winter quarters for the placer miners who wanted a pleasant place to remain during the season of inactivity in the placers. Boise City thus became the commercial town of Idaho, and in the organization of the county became the county seat, and, very appropriately, is the capital of the Territory.

Boise City is situated on the north side of Boise river, about fifty miles above its confluence with Snake river. On what was once a sage-brush plain, apparently almost a desert, such as constitutes so vast an area of western territory, clear-sighted American grit and enterprise have, within a little over twenty years, built a town which is the pride of its citizens and admiration of strangers. This was done when a railway was not within 300 miles, and all supplies had to be hauled these hundreds of miles across plains beset with apparently insurmountable difficulties. The railway came nearer only a few years ago, making a great change, and now the Idaho Central Branch of the Union Pacific Railway has come to the very doors of the town, citizens have all the advantages of other places, and will soon forget the privations of the past.

The growth of Boise City, from the first down to the present, has been steady and sure. It has been a healthy growth, without a boom at any time, and has never been affected by temporary excitements; but has advanced year by year permanently, each being an improvement over the former year.

In 1880 her population was 1,899. Now it is about 6,000, and the assessed valuation is \$4,000,000, on a very low assessment.

The streets are wide and clean, and have good crossings, and the dense growth of shade trees on each side of all the streets makes the avenues delightfully shady and pleasant. The business part of the

town is substantially built with brick and stone, a city ordinance forbidding the erection of wooden buildings within certain limits.

Five miles above Boise City, up the Boise Valley, are a dozen or more hot springs. Some are boiling hot, while others are moderately warm. The water possesses great medical qualities, and persons afflicted with rheumatism, paralysis, malaria, or any chronic diseases, are sure to find relief in a short time after bathing in these springs. Steam baths, mud baths, tub and plunge baths are supplied, and the doctors who are acquainted with the curative properties of these waters pronounce them equal to the Arkansas Hot Springs, Paso Roble in California, or any springs in the world, and recommend them with great favor to patients. The conveniences and accommodations for guests at these springs will be largely improved another season, and they will soon become the Saratoga of the Northwest. Nature has made it a place of great curiosity, and the waters have always proved so beneficial that the springs only need to be known to become famous. The drive to the springs is through a thickly settled portion of the suburbs of the city, studded on either side by beautiful orchards and groves, laden at the proper season with the most delicious fruits. The United States penitentiary is passed a quarter of a mile to the left, when we soon come near the river bank, where a bluff two miles or more in length forms the immense stone quarries that furnish building material for Boise City and Southern Idaho. We next reach the large farm and stock ranch which belongs to the springs property, the springs lying in a large cove or gulch to the right, a portion of the water falling over thirty feet in height, forming a picturesque appearance, causing admiration and astonishment to the beholder. This is one of the loveliest drives out of Boise City, and a place of great resort for the people of the city and visitors who come to the capital. Fish ponds, groves, orchards, and places of amusement are in course of construction, and the bountiful supply of the table from the dairy and farm products of the proprietor will make it a desirable place to spend the summer months, while the hunting and fishing grounds in the hills and mountains near by and up the Boise river, will furnish ample sport to all who enjoy the rod and gun.

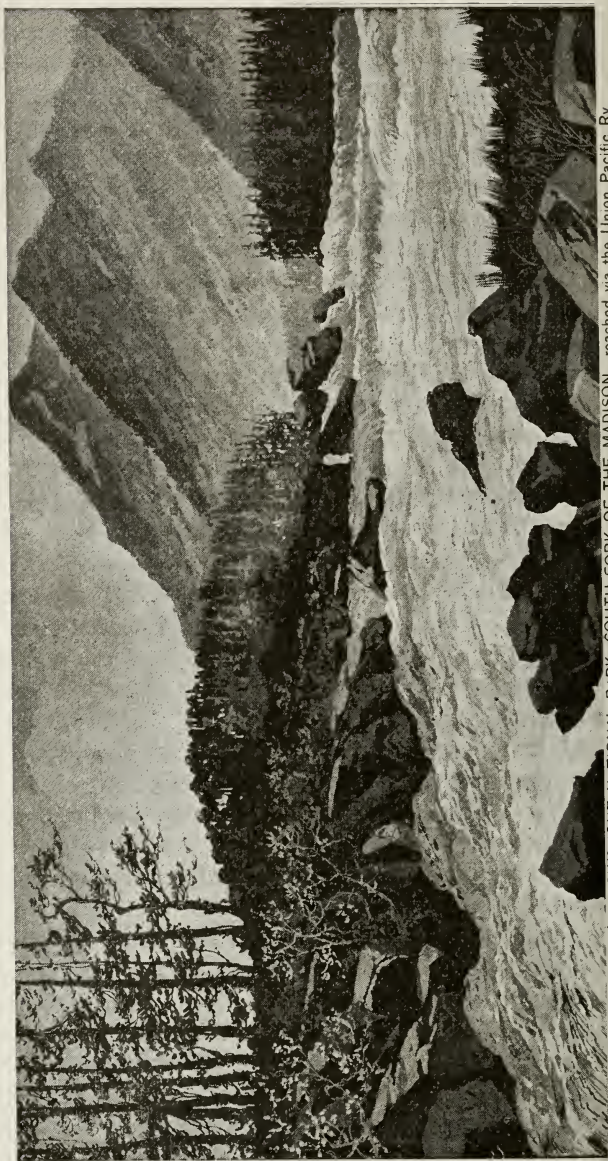


The second tour is from Pocatello to

### SODA SPRINGS.

This famous resort has become well known to tourists only within the past few years. The new hotel, the Idanha, elegant and commodious, meets all requirements for ease and comfort, while the sanitary effects of the waters are incomparable.

Soda Springs has an elevation of 5,780 feet above sea-level and is 1,021 miles from Omaha, 798 from Portland, 258 from Salt Lake, and 221 from Ogden. There are trains by way of Pocatello or Granger; and through passengers may reach it from the East or West. The temperature is beautifully even and mild in summer. These springs have been known of men for above half a century. The Spaniards were here, we know; because at the Cariboo mines, fifty-five miles north, weapons with the mark of Spain upon them have been found. The Indians have always held the springs in great veneration, and Brigham Young blessed them when he visited the place in 1868. It is more than probable that the first white men of recent times who were here were members of the old Rocky Mountain Fur Company. A party of them were at Salt Lake in 1824, and wintered there. They made explorations north, and traced the course of several rivers in the adjacent territory, but we have no record of a visit to Soda Springs. In 1826, many trappers and hunters were exploring the Yellowstone and Bear rivers, and it is supposed visited here. The springs were a favorite spot in the early 50s for over-land travelers to stop and recruit, and all through the later years when the great trains of gold-seekers and emigrants passed over the old Oregon trail they paused at Soda Springs to refresh themselves and rest their jaded horses and cattle. There are no Indian legends connected with the springs. The modern noble red man regards these bubbling miracles as "big medicine," and refuses to drink of them. They would go miles to get fresh running water rather than touch the springs. Soda creek runs sparkling down and empties south into Bear river. The basin in which these springs are located is about twelve miles long by four wide. The area of spring district usually visited is about six miles by three, but the whole country is impregnated for a long distance away up to Blackfoot.



APPROACH TO YELLOWSTONE NATIONAL PARK, SOUTH FORK OF THE MADISON—reached via the Union Pacific Ry.

There are but few springs of any consequence north of this point—that is, into the upper country of Montana and the adjacent mountain country.

There are thirteen springs within a radius of one-half a mile from the hotel—the first one, 200 feet from the hotel, bubbles from the top of a conical mound. Swan Lake, six miles east, is a beautiful sheet of water of unknown depth; Formation Springs, five miles northeast, shows some curious effects of lime deposit, petrifying moss leaves and twigs perfectly. Hooper Spring, one and one-half miles distant, is a beauty; but all pale into insignificance before the Mammoth Spring. This is five miles from the station. The road leads one to a level stretch of prairie covered with waving grass rimmed in by foothills. One walks to the very margin of the spring before it is discovered, so completely is it hidden. And there within a circle of a few yards, a dozen springs form a pool. The water is intensely blue and very deep. Looking down into those unfathomed depths one sees, in brilliant contrast to the color of the water, a white column cleave its way up from its mysterious home, and break in beaded jets upon the surface. There is a weird fascination in watching it, and to drink at this fountain is to taste Nature's champagne. This spring and the Hooper are very strongly charged, and offer a most delicious beverage. Chloride of sodium, bicarbonate of magnesium, and bicarbonate of calcium predominate, and an excess of free carbonic acid gas. The health-giving properties of the waters are widely known, and are recommended by the faculty as a specific for indigestion, stomach and kidney troubles, etc. Springs near the station are strongly tinctured with iron, and are an effectual remedy for thin blood, ladies in delicate health, etc. The "Idanha" water is bottled at the works about a mile from the station. Many charming excursions can be arranged from Soda Springs. There is fine fishing on all sides, mountain climbing for those who desire it, plenty of sport in duck shooting, and an infinite variety of lovely drives in every direction.

Beyond the possibility of a doubt, those bright, sparkling waters, bursting forth from the earth in a hitherto but little known valley of Idaho, and now bearing the name of Soda Springs, are yet to become of world-wide celebrity. When the Union Pacific Company built the Oregon Short Line from Granger

westward, passing through the secluded valley and within a few feet of many of the springs, the destiny of the place was changed. Henceforward, instead of being sought by the few whose knowledge of the virtues existing in the waters led them to this out-of-the-way place, it was to be in the reach of the many; its springs to be as a magnet to attract the afflicted from every State, and to yield to thousands the boon of health regained. Yet, as was said by the *Salt Lake Daily Tribune* in its account of the springs in 1887: "Of the tens of millions of people who inhabit the United States east of the Rocky Mountains, probably not one in a thousand has heard of the Soda Springs in Idaho Territory; probably not one in ten thousand has any idea of their rare medicinal properties, and not one in a hundred thousand realizes that, in comparison with them, all the famous spas of the old world sink into insignificance."

But for all that, they were not entirely unknown even in days long past. "From time immemorial, the virtue of these waters was known to the Indians; they were officially reported by General Frémont in his explorations of 1843; they afforded health and invigoration to thousands who came 'across the plains' in later years; they were discovered by the Mormon explorers when they penetrated into the northern country, and were afterward solemnly blessed by Brigham Young. Their local reputation as a health resort has always stood high, and many have been the praises heaped upon them." Now, however, the Union Pacific have made them easily accessible from all points; "the journey that required four months of incessant toil and hardship from the East to the springs, a palace car makes easily and without a jar in one and a half days, while the route between the springs and the Pacific is compassed in the same luxurious way in two days."

But it is of the waters we were about to speak: The importation of table waters from Europe is immense, and the statistics showed two years ago that there were twice as many thousand cases of Apollinaris sold in New York alone as the custom house showed was imported from all Europe, leaving the deduction that at least half the so-called Apollinaris sold in the United States is bogus. Beside, the Apollinaris is

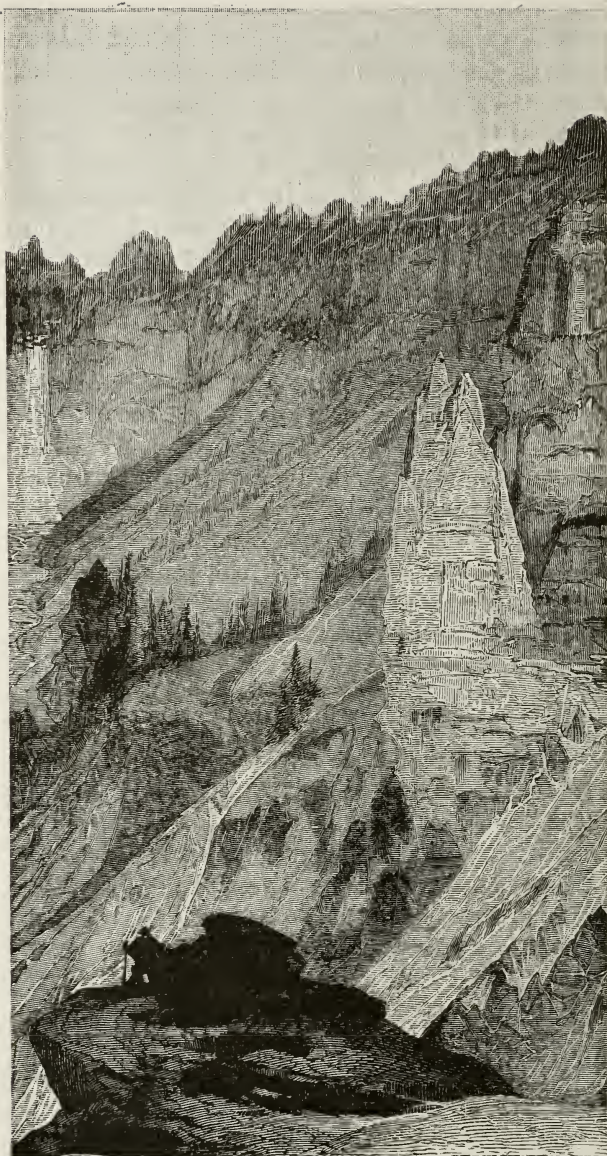


charged with gas to give it life. A large quantity of other water, ostensibly from other European and American springs, is also sold. Now it is known that the Soda Springs water equals or excels the best of them. The waters, as stated by the *Tribune*, "are charged with bicarbonate of soda, bicarbonate of potash, chloride of sodium and potash, sulphate of magnesia and lime, alumina, silica, carbonate of iron, free carbonic acid gas, and a multitude of other ingredients, and they are almost specifics for the cure of all manner of indigestion, all kidney troubles, up even to advanced symptoms of Bright's disease, and diabetes, dropsy, and a thousand kindred ills; they take away all appetite for spirituous liquors, and the water is the pleasantest for table use that has ever been found. Lately, about two years ago, "the Soda Springs Water Company was organized, and a series of scientific and mechanical experiments, continuing through several weeks, were carried on until the secret of bottling the water and retaining all its pleasant and medicinal properties was caught; and now the water is on sale in all towns of the surrounding country, and the trade has so rapidly extended, east and west, that it is believed it will practically drive out of use the water from European spas before the close of the present year." They are now bottling two million quarts every twelve months.

The splendid new hotel erected and owned by the National Mineral Water Company, and now leased by the Pacific Hotel Company, was opened for the reception of guests June 1, 1888.

The Idanha is first class in all respects; with all the modern improvements; water, electric lights, electric bells, etc. It has ample accommodation for 150 guests. All passenger trains stop at its very doors, and every attention will be paid to those honoring the new hotel with a visit. Rates will be from \$3 per day upward, with special rates for parties or families, or those contemplating an extended stay. Livery service and attentive guides always to be procured at reasonable rates.

Soda Springs occupy a valley in a depression in the Wahsatch Mountains, at an altitude of about 6,000 feet. Around them the lofty peaks of the mountains are covered with perpetual snow. The region is full of interest, not to the geologist alone, but also to the



CLIFF IN GRAND CANON, YELLOWSTONE NATIONAL PARK.  
Reached via the Union Pacific Ry

ordinary sightseer. The number of springs, each with an individuality of its own, is amazing. Among the prominent and the curious we may specially name the following: The Idanha, the Hooper, the Mammoth, the Eye Water, the Brigham, the Lime Kiln, the Champagne, the Steamboat, the Formation Spring and Cave, and Swan Lake.

All the springs should be seen by persons wishing to realize the strangeness of the Soda Springs region. At different periods the under currents have changed their place of emergence, until the whole country shows traces of the limy deposits.

At the Idanha the Natural Mineral Water Company have their bottling works, and of the waters, they bottle annually over two million quarts. The Hooper is a glorious spring, bursting out of the earth in a great volume of crystal clearness, sparkling brilliantly in the sunlight as it hurries away to form the greater part of Soda Spring creek. Its waters contain a somewhat larger percentage of iron than the Idanha, and differs somewhat in taste from that peerless spring. The Steamboat received its name in the early days, being described in the old guide books to California and Oregon. Its hot, jetting water gives off a noise of escaping steam exactly like the regular puffing of a steamboat. Formation Spring is particularly novel, and the cause of the name is a deep, well-like hole descending into the earth at an acute angle, being merely the crater of an extinct hot spring. Swan Lake is one of the most beautiful as well as most strange of all the springs; every effort to sound its depths has so far been unavailing; its waters are delightfully clear and of a deep green color. Oval in form, it is slightly more than sixty feet by forty feet across. On the west side the water trickles over a bank thirty-five or forty feet high, which has been formed by the water itself, highly charged with lime, leaving a residue as the waters evaporated in the summer sunshine. Around the margin, bushes and willows grow, and where the overhanging branches drop into the water they have become covered with the limy formation. Wagon loads of specimens, leaves, twigs, grasses, all intermingled in a net-work of stony embroidery, have been collected from the locality, and now adorn the cabinets of those prizing such freaks of nature, all over the land.

While mentioning the places of interest to be visited, we must not forget to mention the Big Bend of Bear river, about five miles from the hotel, and the crater of an extinct volcano, a few miles farther away. This volcano, when in an active state, poured its molten lavas down into the cañon of the Port Neuf, and out onto the Snake river plains beyond.

The region around Soda Springs may be said to be a paradise for the fisherman and hunter. Bear river always yields a fine reward to the lover of rod and line; what is known as Eight Mile stream is even better, while the Blackfoot creek, a tributary of Snake river, is without an equal for trout in all the country round, it is the trout stream par excellence. Of game there is the following: Ducks, prairie chickens, sage hens, geese and swans. In the season thereof, ten to twelve miles from the hotel, among the spurs of the Wahsatch Mountains, deer and elk are quite plentiful, and the nimrod, if he so desires, can know what it is to face the bear. Those specially fond of duck shooting should note the following: A party from Butte City, Mont., last fall, in a two days' hunt, secured 500 ducks, besides something between thirty and forty geese. The fisherman fares equally as well, and in hunting for the larger game the results are always fine.

## CHEMICAL ANALYSIS OF THE SPRINGS.

The following analysis of Horse-Shoe or Codman Spring was made by Mr. H. B. Hodges, Chemist and Engineer of Tests, Union Pacific Railway:

Specific Gravity .....	1.0501	at 15 Co.
Temperature of Spring .....	57 <sup>o</sup>	F.
One gallon contains in solution:		
Carbonate of Lime .....	74.64	grains.
Carbonate of Magnesia .....	.72	"
Carbonate of Iron .....	2.59	"
Carbonate of Manganese .....	.08	"
Sulphate of Lime .....	1.13	"
Sulphate of Magnesia .....	33.59	"
Chloride of Magnesia .....	.72	"
Bromide of Magnesia .....	.03	"
Silica .....	3.71	"
Alumina .....	.18	"
Bicarbonate of Ammonia .....	.20	"
Bicarbonate of Potash .....	5.48	"
Bicarbonate of Soda .....	2.65	"
Chloride of Lithium .....	Trace.	
<hr/>		
Total .....	134.72	"
Total Carbonic Acid .....	178.13	"
1 Liter contains 1543 c. c. of Free Carbonic Acid.		



This analysis was sent to Professor E. S. Wood, of Harvard Medical School, who records his opinion as follows:

HARVARD MEDICAL SCHOOL,  
CHEMICAL LABORATORY,

BOSTON, MASS., April 16, 1889.

The Codman or Horse-Shoe Spring water is very decidedly a chalybeate water and also a laxative one. It contains about twice as much carbonate of iron as the Saratoga High Rock Spring, more than twice as much as the Saratoga Hathorn Spring, and about the same as the Saratoga Pavilion Spring, all of which are highly praised as ferruginous waters, as you are undoubtedly aware.

The water of the Codman Spring resembles, as far as the amounts of lime, magnesia, and iron are concerned, the water of the famous Kissingen Springs of Germany, which are extolled as tonic and laxative waters. These waters contain, however, also considerable quantities of common salt, while the Codman Spring water contains none.

I have no hesitation in saying that the analysis of Mr. Hodges shows that the water of the Codman or Horse-Shoe Spring possesses greater tonic and laxative properties than that of many mineral springs which have received a world-wide reputation as tonics and laxatives.

(Signed.)

EDWARD S. WOOD.

The following analysis has been made of the various springs in and around the town of Soda Springs:

	TEMPERATURE.		Total Solids per U. S. Gal.	IRON.	
	Water.	Air.		Protox- ide.	Carbon- ate.
			Grains.		
Codman Spring -----	57 F.	-----	134.72	-----	2.59
Hooper Spring -----	52 F.	57	79.95	1.20	2.91
Idanha Water (90%) Sp'g -----	-----	-----	87.70	-----	1.50
Mound Hot Spring -----	83 F.	66	197.98	-----	-----
Steamboat Spring -----	52 F.	-----	191.55	-----	-----
Roland Spring -----	52 F.	-----	170.50	-----	-----
Octagon Spring -----	56 F.	-----	130.80	.98	2.11
Williams Spring -----	61 F.	-----	139.86	1.14	2.50
Meadow Spring -----	-----	-----	-----	.44	.91
Triplet Spring -----	-----	-----	-----	.27	.51
Sulphur Lake Spring -----	-----	-----	93.50	-----	-----



FALLS OF THE YELLOWSTONE, YELLOWSTONE NATIONAL PARK.  
Reached via the Union Pacific Ry.

## MONTANA

is an Indian word, meaning "the country of the mountains," and was visited by the French explorer Verendrye and his brother as early as 1743-44. The Lewis and Clarke expedition was here in 1805, and named the three forks of the Missouri respectively, Galatin, Madison and Jefferson. This region was a part of the Louisiana purchase of 1803. The Territory was organized May 16, 1864, and admitted into the Union in November, 1889, and is in extent 550 miles from east to west and nearly 300 from north to south, containing an area of 150,000 square miles. There are 16,000,000 acres of farm land, 38,000,000 acres of grazing land and 14,000,000 acres of forest. One-fifth of the territory, or about 20,000,000 acres, is mountainous.

The third tour is made from Pocatello to Beaver Cañon, where the traveler outfits for Yellowstone Park.

When Yellowstone National Park was set aside to be forever the grand tourist resort of the people, and their common property, few had an idea of the endless variety and stupendous grandeur of the features embraced in this tract of country, fifty-five by sixty-five miles. The park embraces an area of 3,000 square miles, has an average elevation of about 8,000 feet above sea-level, and is encircled by magnificent mountain ranges.

From Beaver Cañon the Union Pacific runs a fine line of stages to Fire Hole Basin, in the park, 100 miles distant. The stage ride from Beaver Cañon to Fire Hole Basin lies through a series of wonders, passing by Henry Lake, with its grassy shores that lie 3,000 feet below the peaks reflected in it. Sawtelle Mountain is full of darkly splendid caves. Cliff Lake is ten miles away. The plummet has been dropped 1,400 feet into its depths, but found no bottom. Hunting and fishing in this vicinity will amply repay the sportsman, though he comes from over the ocean. Bowling over Tyghee Pass and into the luxuriant meadows of the Upper Madison Valley, the tourist overlooks a wilderness of pine-clothed heights and depths. Fifteen miles and the South Fork of the Madison river is crossed, ten miles from the entrance of the park;





GEYSERS, YELLOWSTONE NATIONAL PARK.  
Reached via the Union Pacific Ry.



once inside of which, the tourist is on Madison Terrace, a beautiful natural drive. There the tourist strikes a spur of Madison Range for Fire Hole Basin, from which roads reach to every attraction the park affords. From the summit there is another of these matchless views, including Madison Basin and the river as it winds for thirty miles in and out of sight. From Fire Hole Basin there are seen pillars of clouds showing where the springs and geysers are. Geyser Meadows are two miles away. Here are several geysers which throw their torrents twenty-five feet or higher. Dome Spring is at the top of a calcareous deposit of livid colors, and some of its neighbors are similarly situated. "Queen Laundry" is a spring whose waters will almost instantly cleanse even the dirtiest saddle blanket, and which finally drop into a basin at delightful bathing temperature. Fairy Creek Falls jump 250 feet over an adjacent cliff. With these spouting, leaping novelties all about, Midway Geyser Basin is reached five miles from Fire Hole Basin. Here are the grandest hot springs in the world. The overflow of hot water comes from the Great Spring the equal of which no human eye ever saw. This aperture is 250 feet across and is walled in by sides thirty feet high. The surface is in constant turmoil, and the rising steam scalds the incautious. A glance into the gulf causes a shudder. Only a few yards away there is a cold fount twenty-five feet in diameter, filling an elaborately-chased basin of unknown depth. Near by are the Chalk Vats, bubbling and spurting their mushy compound, and throwing out splashes of it which vary from a snowy white to a bright pink.

Upper Geyser Basin, eight miles from Fire Hole Basin, is the seat of the ten largest geysers ever discovered, beside which those of Iceland are trifling. There is a charming grove within a stone's-throw of Castle Geyser, which begins to give vent to its pent up force in muttered thunder, and then its flood shoots over the cone, first a spurt and then a stream; then with a shaking of the earth and the roar of a tempest, a river bounds upward like a rocket, submerging broad acres with the descent of its boiling flood. Half a mile away "Old Faithful" spouts every fifty-seven minutes, throwing a stream several feet in diameter to a height of 200 feet. Across the river is the "Bee Hive," whose fountain flies 200 feet in the

air, forming a crystal arch beautiful in the sunlight. "The Giantess" has a crater eighteen by fifteen feet in diameter, belching forth such a volume as doubles the amount of water in Fire Hole river, here twenty feet in width and a foot deep. There is a thrill, a groan, a tremor, dense volumes of steam, a rolling and clashing of unseen waves, and a deafening boom as an immense body of water is hurled upward to the sky, its extreme jet reaching 250 feet above the earth.

Next is Gibbon Falls, where, in a wildwood tangle, they drop eighty feet; then Gibbon Cañon, with its sides 2,000 feet high, from which the tourist emerges into Elk Park. In the defile is heard a boom, boom, boom, that never ceases, and from an orifice in the rock comes steam in regular puffs as the pulsation of a great waste pipe of an engine. Monument Geyser and the famous Paint Pots, with their various and vivid hues, are near by. Norris Geyser Basin is the next in order. It is the oldest basin in the park, the hottest and most dangerous for pedestrians. To the right is Mammoth Geyser; when at rest a peep may be had into its gaping throat, and its blood-chilling gurgle can be distinctly heard.

Yellowstone Lake is twenty-five miles from Fire Hole Basin. The altitude of this lake is 7,788 feet. It is thirty miles long and ten to fifteen wide, with numerous islands.

The Natural Bridge of Rock spans Bridge creek at a height of forty feet and affords carriage room. Down the river twelve miles is Devil's Den; east of this is Mud Volcano. Brimstone Mountain is three miles below. Here pure sulphur is shoveled up by the wagon-load.

The Upper Falls of the Yellowstone are reached by an easy trail. Here the rapids narrow to less than 100 feet, and the overhanging rocks press so closely together that a bridge could be easily thrown across. The water eddies and cascades, and then flies downward 397 feet, while the grandest cañon of the world stretches away 1,500 feet below. The mind can not grasp Grand Cañon; words can not paint it; it glows with a life of its own, and with colors of its own, or born of the sun and the spray. Tower Falls and Cañon are twenty miles from this charming spot. Specimen Mountain is forty miles from Fire

Hole Basin. It is covered with agate, once wood, stone snakes and fishes, with crystals and petrified roots, while the view from the summit is sublime.

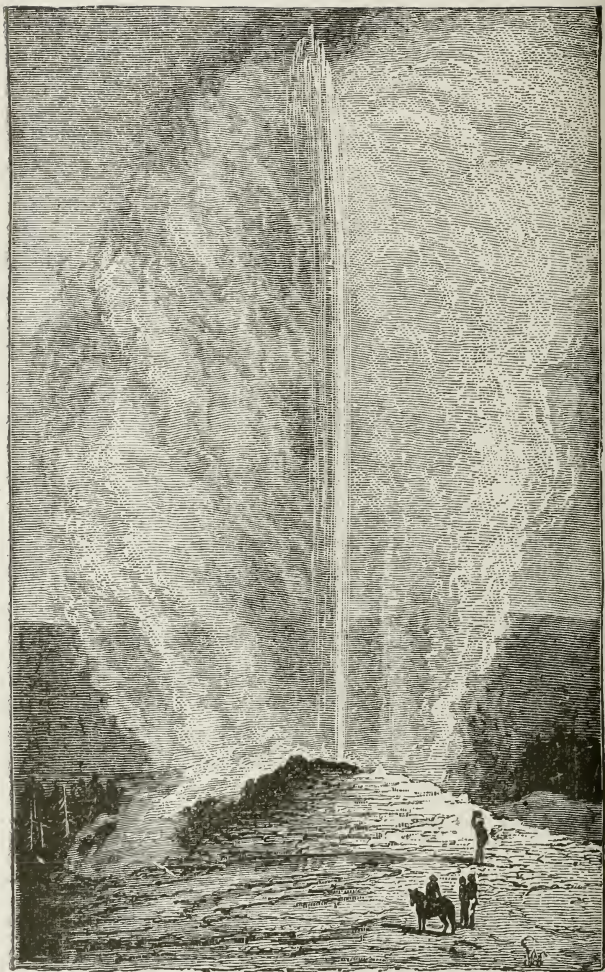
And this is Yellowstone National Park. Words can not convey a proper realization of its grandeur and magnificence. Nowhere else in America are there such superb views as the Park affords; nowhere else such an abundance of finny game; nowhere else such myriads of wild fowl; nowhere else such a delightful camping place, or more perfect weather.

### SOAPING A GEYSER.

A few years ago tourists amused themselves by "soaping" many of the geysers in the park and watching the commotion which the foreign substance created. A very instructive and entertaining paper on the subject of "Soaping Geysers," by Mr. Arnold Hague, of the United States Geological Survey, was read before the American Institute of Mining Engineers at New York, in February, 1889. Mr. Hague's essay is at once so scholarly, and so interesting, that it is worthy of permanent preservation, and is inserted herewith in full:

"At the Buffalo meeting, October, 1888, Dr. Raymond presented a paper entitled: 'Soaping Geysers', in which he called attention to the use of soap by tourists to cause eruptions of several of the well-known geysers in the Yellowstone Park. Incorporated in this paper appears a communication received from me, written from camp in the park, in reply to some inquiries on the subject. The letter discussed somewhat briefly the means employed by visitors to the park to hasten the eruptions from hot springs and reservoirs of hot water, which remain dormant for days or even weeks or months, at a temperature near the boiling-point, without any display of geyser-action. As the paper has called forth considerable comment, I desire to elucidate one or two points in relation to the temperature of the springs, and to answer some inquiries about the composition of the thermal waters.

"In the summer of 1885, a Chinaman employed as a laundryman for the accommodation of the tourists at the Upper Geyser Basin, accidentally discovered, much to his amazement, that soap thrown into the spring from which he was accustomed to draw his supply of water, produced an eruption in every way similar to



ONE OF THE GEYSERS, YELLOWSTONE NATIONAL PARK.

Reached via the Union Pacific Ry.



the actual workings of a geyser. Tourists with limited time at their command, who had traveled thousands of miles to look upon the wonders of the Yellowstone, soon fell into the way of coaxing the laundryman's spring into action, to partly compensate them for their sore disappointment in witnessing only the periodical eruptions of Old Faithful. Successful attempts upon this spring soon led to various endeavors to accelerate action in the dormant and more famous geysers. In a short time, so popular became the desire to stimulate geysers in this way, the park authorities were compelled to enforce rigidly the rule against throwing objects of any kind into the springs.

"In connection with a thorough investigation of the thermal waters of the Yellowstone Park and the phenomena of the geysers, I undertook a number of experiments to ascertain the action of soap upon the waters, and to determine, if possible, those physical conditions of various pools and reservoirs which permitted the hastening of an eruption by the employment of any artificial methods. This investigation, conducted from time to time, as opportunity offered, throughout the field-season of 1885, included experiments upon the geysers and hot springs of the Upper, Lower, and Norris geyser basins. The results proved, beyond all question, that geyser-action could be forced in a number of ways; but most conveniently by the application of soap. The greater part of the more powerful geysers undergo no perceptible change with a moderate use of soap, although several of them may, under favorable physical conditions, be thrown at times into violent agitation. In most of the experiments, Lewis's concentrated lye, put up in one-half pound cans for laundry purposes, was employed. Each package furnished a strong alkali, equivalent to several bars of soap. In this form, alkali is more easily handled than in bars of soap, more especially where it is required to produce a viscous fluid in the larger reservoirs; and, in conducting a series of experiments for comparative purposes, it seemed best, in most instances, to employ the same agent to bring about the desired results.

"Old Faithful, the model geyser of the park, exhibits such marked regularity in its workings that attempts to hasten its action appear futile. The

interval between eruptions is about sixty-five minutes, and rarely exceeds the extreme limits of fifty-seven and seventy-two minutes. After an eruption of Old Faithful, the reservoir fills up gradually; the water steadily increases in temperature; and conditions favorable to another eruption are produced under circumstances precisely similar to those which have brought about the displays for the past eighteen years, or as far back as we have authentic records. The few experiments which have been made upon Old Faithful are insufficient to afford any results bearing on the question; but it seems probable that soon after the water attains the necessary temperature an eruption takes place.

“Of all the powerful geysers in the park, the Bee-Hive offers the most favorable conditions for producing an eruption by artificial means, all the more striking because the natural displays are so fitful that they can not be predicted with any degree of certainty. Observations, extending over a period of several years, have failed to determine any established law of periodicity for the Bee-Hive, even for three or four consecutive months; although they indicate that some relationship may exist between its display and those of the famous Giantess. Frequently the Bee-Hive will play several times a day and then become dormant, showing no signs of activity for weeks and months, although the water may stand above the boiling-point the greater part of the time. The name Bee-Hive was suggested by the symmetry of the cone built around the vent. It rises about four feet above the sloping mound of geyserite, and, in cross-section, measures about three feet at the top, while, at the bottom of the cone, the vent is less than ten inches in width. From the top of this narrow vent it is only possible to sink a weight seventeen feet before striking a projecting ledge, which interferes with all examination of the ground below. The constant boiling and bubbling of the water, the irregularity of its action, and the convenient location of the geyser, within an easy walk from the hotel, make attempts to accelerate the eruptions of the Bee-Hive most attractive to tourists.

“In most instances such efforts are futile; yet success does so frequently reward the astonished traveler that, unless the geyser were carefully watched

by the authorities, attempts would be made daily throughout the season. If the conditions are favorable to an eruption, it usually takes place in from ten to twenty-five minutes after the addition of laundry soap or lye. It is doubtful if more than two eruptions of the Bee-Hive have ever been produced on the same day by artificial means ; although I know of no reason, based upon the structure of the geyser, why more displays might not be obtained; for the reservoir and vent fill up with boiling water very rapidly after each eruption.

“Although the Giantess is situated only 400 feet from the Bee-Hive, these two differ in surface and underground structure, and mode of action, as widely as any two of the more prominent geysers of the park. Around the Giantess no cone or mound has formed. The broad basin is only partially rimmed in by a narrow fringe of siliceous sinter, rising above and extending out over the deep blue water. At the surface, this basin measures about fifteen to twenty feet in width by twenty to thirty feet in length. It has a funnel-shaped caldron, thirty feet in depth, ending in a vertical vent or neck, twelve feet deep, through which a sounding-lead may be dropped into a second reservoir, meeting a projecting ledge or obstruction of some kind, sixty-one feet below the surface. After an outburst of the Giantess, the basin, which has been completely emptied of its water, gradually fills again to the top; and, for days before another eruption, a steady stream of hot water overflows the brim. The intervals between the eruptions of the Giantess vary from twelve to twenty days, and the displays last several hours, being unsurpassed for violence and grandeur by any geyser in the Upper Basin. Artificial means have never been successful in bringing this geyser into action; although, for days before an eruption, it is an easy matter to cause an agitation of the water by throwing into the basin small pieces of sinter, or to produce a boiling on the surface, lasting several minutes, by simply stirring the water with a stick.

“The Giant, one of the most violent of the geysers in the Upper Basin, more closely resembles the Bee-Hive than any other of those along the Fire Hole river. It has built up a cone ten feet in height, one side of which has been partly broken down by some eruption

more violent than any witnessed at the present day. Through this notched side, steam and broken jets of water are constantly emitted; and, on this account, but little examination has been made of the underground reservoirs and vents. The Giant is fitful in its action, at times playing with considerable regularity every fourteen days, and at other times lying dormant for nearly a year. I have no positive knowledge that an eruption of the Giant has ever been produced by any other than natural causes. At the time of my experiments, no eruption of the Giant had taken place for several months; although the water was constantly agitated, so much so that it was quite impossible to examine the vent with any satisfactory results. The only effect produced by the application of lye was additional height to the column of water thrown out, and a decided increase in the thumping and violence of the boiling.

“In the Lower Basin, the Fountain has been more carefully studied than the other geysers; and, its action and periodicity of eruptions having been fairly well ascertained, it afforded the most favorable conditions for observing the action of soap and lye upon the waters. In its general structure the Fountain belongs to the type of the Giantess, having a funnel-shaped caldron which, long before an eruption, overflows into an adjoining basin. At the time of my experiments upon the Fountain, the intervals between eruptions lasted about four hours. This interval allowed sufficient time to note any changes which might take place. My own experiments with lye yielded no positive results; although it seemed highly probable that action might be hastened by the application of soap or lye just before the time for an eruption, or when, for some cause, the eruption was overdue. I preferred to make the attempt to bring about an explosion before the usual time, only waiting until the water in the pool had nearly reached the boiling-point. All experiments failed. The previous year, when wishing to produce action for the purpose of photography, I was enabled to accomplish the desired result by vigorously stirring, with a slender pole, the water near the top of the vent connecting with the lower reservoir. In this instance, it should be said, the usual interval of time between eruptions had long since passed; the geyser was, so far as time



was concerned, a half-hour overdue. My opinion now is that the experiments with lye failed because the temperature had scarcely reached the boiling-point.

“The Monarch, in the Norris Basin, is quite unlike those already described, and affords evidence of being a much newer geyser. It is formed by two convergent fissures, on the line of a narrow seam in the rhyolite, probably coming together below the surface. The main vent measures about twenty feet in length and, at the surface, three feet in width. But slight incrustation is found around the vent, the conditions not being very favorable to deposition. In this narrow fissure the water, which ordinarily stands about fifteen feet below the surface, constantly surges and boils, except immediately after an eruption. The intervals between eruptions vary somewhat from year to year; but, at the time of these experiments, the action was fairly regular, the geyser playing every four hours. I was successful in obtaining an eruption quite equal to the natural displays, which throw a column of water fifty feet into the air. Here at the Monarch there is no surface reservoir, and the narrow fissure, filled with loose blocks of rocks, around which the water is in constant agitation, prevents all measurements of depth.

“The results of the many experiments, not only upon active geysers, but upon a large number of hot springs, determine fairly well the essential conditions which render it possible to bring about geyser-action by artificial means. Negative results are frequently as valuable for this inquiry as experiments yielding imposing displays.

“Outside of a few exceptional instances, which could not be repeated, and in which action was probably only anticipated by a few minutes in time, geyser eruptions produced by soap or alkali appear to demand two essential requirements: First, the surface-caldron or reservoir should hold but a small amount of water, exposing only a limited area to the atmosphere; second, the water should stand at or above the boiling-point of water for the altitude of the geyser basin above sea-level. The principal factor which makes it possible to cause an eruption artificially is, I think, the superheated and unstable condition of the surface-waters. Many of the geysers

and hot springs present the singular phenomena of pools of water heated above the theoretical boiling-point, and, unless disturbed, frequently remain so for many days without exhibiting any signs of ebullition. It may not be easy to describe accurately these superheated waters; but any one who has studied the hot springs and pools in the park, and carefully noted the temperatures, quickly learns to recognize the peculiar appearance of these basins when heated above the boiling-point. They look as if they were "ready to boil," except that the surface remains placid, only interrupted by numerous steam-bubbles, rising through the water from below, and bursting quietly upon reaching the surface.

"Marcet, the French physicist, has specially investigated the phenomena of superheated waters, and has succeeded in attaining a temperature of  $105^{\circ}$  C. before ebullition. Superheated waters in nature, however, appear to have been scarcely recognized, except during the progress of the work in the Yellowstone Park, in connection with a study of the geysers. The altitudes of the geyser-basins above sea-level have been ascertained by long series of barometric readings, continued through several seasons. In conducting a series of observations upon the boiling-points of the thermal waters in the park, Dr. William Hallock, who had charge of this special investigation, determined the theoretical boiling-point by noting the mean daily readings of the mercurial column. The exact boiling-point of a pure surface-water, obtained from a neighboring mountain stream and the boiling-point of the thermal waters from the springs, were determined from actual experiments by heating over a fire, employing every possible precaution to avoid sources of error. Surface-waters and deep-seated mineral waters gave the same results, and coincided with the calculated boiling-point at this altitude. Hundreds of observations have been carefully taken where the waters in the active and running springs boiled at temperatures between  $198^{\circ}$  and  $199^{\circ}$  Fahr.

"As will be shown later in this paper, the thermal waters are solutions of mineral matter too dilute to be affected to any appreciable extent as regards their boiling-point by their dissolved contents. The theoretical boiling-point for the springs and pools in the Upper Geyser Basin may be taken at  $92.5^{\circ}$  C.

(198.5° Fahr.) In many of the large caldrons, where the water remains quiet, a temperature has been recorded of 94° C. (201.2° Fahr.), without the usual phenomena of boiling. This gives a body of superheated water, with a temperature at the surface 1.5° C. (2.7° Fahr.) above the point necessary to produce explosive action. Thermometers plunged into the basins show slightly varying temperatures, dependent upon their position in the basin. They indicate the existence of numerous currents, and a very unstable equilibrium of the heated waters, which are liable, under slight changes, to burst forth with more or less violence. It is under these conditions that geyser-action can be accelerated by artificial means. If, into one of these superheated basins, a handful of sinter pebbles be thrown, or the surface of the water be agitated by the rapid motion of a stick or cane, or even by lashing with a rope, a liberation of steam ensues. This is liable to be followed by a long boiling of the water in the pool, which in turn may lead to geyser-action. There is some reason to believe that, at least in one instance, an eruption has been brought about by a violent but temporary gust of wind, which either ruffled the water or disturbed the equilibrium of the pool, and changed momentarily the atmospheric pressure.

“In Iceland, travelers have long been accustomed to throw into the geysers turf and soft earth from the bogs and meadows which abound in the neighborhood, the effect produced being much the same as that of sinter pebbles and gravel upon the geysers in the National Park. So well was this understood, that at one time, a peasant living near the Iceland locality kept a shovel solely for the accommodation of those visiting the geysers.

“In my letter to Dr. Raymond, I mention the curious fact that the laundryman's spring, now known as the Chinaman, in which geyser-action may most easily be produced by artificial means, has never been regarded by the Geological Survey as anything but a hot spring, and no one has ever seen it in action without the application of soap, except in one instance, when it was made to play to a height of twenty feet, after stirring it vigorously with a pine bow for nearly ten minutes. In our records it is simply known as a spring.

“If soap or lye is thrown into most of the small pools, a viscous fluid is formed; and viscosity is, I think, the principal cause in hastening geyser-action. Viscosity must tend to the retention of steam within the basin, and, as in the case of the superheated waters, where the temperature stands at or above the boiling-point, explosive liberation must follow. All alkaline solutions, whether in the laboratory or in nature, exhibit, by reason of this viscosity, a tendency to bump and boil irregularly. Viscosity in these hot springs must also tend to the formation of bubbles and foam when the steam rises to the surface, and this in turn aids to bring about the explosive action, followed by a relief of pressure, and thus to hasten the final and more powerful display. Of course, relief of pressure of the superincumbent waters upon the column of water below the surface basin is essential to all eruptive action. These conditions, it seems to me, are purely physical. Undoubtedly, the fatty substances contained in soap aid the alkali in rendering the water viscous. On the other hand, when concentrated lye is used, it acts with greater energy, and furnishes a viscous fluid where soap would yield only surface suds, insufficient to accomplish any phenomenal display.

“It is well known that saturated solutions of mineral substances raise the boiling-point very considerably, the temperature having been determined for many of the alkaline salts. In general, I believe the boiling-point increases in proportion to the amount of salt held in solution. Actual tests have shown that the normal boiling-point of siliceous waters in the park does not differ appreciably from the ordinary surface-waters, mainly, I suppose, because they are extremely dilute solutions.

“The amount of lye required to produce a sufficiently viscous condition of the waters, increases but slightly the percentage of mineral matter held in solution.

“All the waters of the principal geyser basins present the closest resemblance in chemical composition, and, for the purposes of this paper, may be considered as identical in their constituents. They have a common origin, being, for the most part, surface-waters which have percolated downward for a sufficient distance to come in contact with large volumes of steam ascending from still greater depths. The mineral contents



of the hot springs are mainly derived from the acid lavas of the park plateau, as the result of the action of the ascending steam and superheated waters upon the rocks below. These thermal waters are essentially siliceous alkaline waters, carrying the same constituents in somewhat varying quantities; but always dilute solutions, never exceeding two grams of mineral matter per kilogram of water. When cold, they are potable waters, for the most part slightly alkaline to the taste, and probably wholesome enough, unless taken daily for a long period of time.

“The following analyses of three geyser-waters, selected from the Upper, Lower, and Norris geyser basins, may serve to show the composition of all of them, the differences which exist being equally well marked in the analyses of any two waters from the same geyser basin:

	BEE-HIVE GEYSER.		FOUNTAIN GEYSER.		FEARLESS GEYSER.	
	Grams per kilo. of water.	Per cent. of total matter in solution.	Grams per kilo. of water.	Per cent. of total matter in solution.	Grams per kilo. of water.	Per cent. of total matter in solu- tion.
Silica .....	0.3042	25.12	0.3315	23.69	0.4180	25.60
Sulphuric Acid	0.0271	2.24	0.0195	1.39	0.0367	2.25
Carbonic Acid	0.0920	7.60	0.2307	16.48	0.0046	0.28
Phosphoric A'd .....			0.00004			
Boracic Acid	0.0145	1.20	0.0138	0.99	0.0223	1.36
Arsenious Acid	0.0011	0.09	0.0027	0.19	0.0022	0.14
Chlorine .....	0.3894	32.15	0.3337	23.84	0.6705	41.06
Bromine .....	Trace.		0.0004	0.03	0.0026	0.16
Iodine .....						
Fluorine .....						
Hydr. Sulph. ....			Trace.		Trace.	
Oxygen (Basic)	0.0364	3.00	0.0654	4.67	0.0113	0.70
Iron .....	Trace.		0.0002	0.01	0.0006	0.04
Manganese .....			Trace.			
Aluminium .....	0.0029	0.24	0.0057	0.41	0.0002	0.01
Calcium .....	0.0039	0.32	0.0014	0.10	0.0092	0.56
Magnesium .....	0.0002	0.02	0.0010	0.07	0.0001	0.01
Potassium .....	0.0213	1.76	0.0379	2.71	0.0415	2.54
Sodium .....	0.3118	25.74	0.3522	25.16	0.4046	24.77
Lithium .....	0.0061	0.50	0.0035	0.25	0.0081	0.50
Ammonium .....	0.00021	0.02	0.00015	0.01	0.00025	0.02
Cæsium .....					Trace.	
Rubidium .....					Trace.	
	1.21111	100.00	1.39979	100.00	1.63275	100.00

Bee-Hive Geyser, Upper Geyser Basin; date of collection, September 1, 1884; temperature, 199.4° Fahr.; reaction, alkaline; specific gravity, 1.0009.

Fountain Geyser, Lower Geyser Basin; date of collection, August 24, 1884; temperature, 179.6° Fahr.; reaction, alkaline; specific gravity, 1.0010.

Fearless Geyser, Norris Geyser Basin; date of collection, August 18, 1884; temperature, 190.4° Fahr.; reaction neutral; specific gravity, 1.0011.

"The differences of temperature shown in these three waters are simply due to the varying interval between the time of collection and the last preceding eruption of the geyser. In the case of the Fountain, the water rises in a large, open basin, which slowly fills up, increasing in temperature until the time of the eruption, the form of the basin permitting the collection of the water two or three hours before the next outburst. In the case of the Fearless, the surface-reservoir is a shallow saucer-shaped basin, into which the water seldom rises before attaining a temperature near the boiling-point. At the Bee-Hive, the water only reaches a sufficiently high level to permit of its collection without difficulty when the temperature stands at or near the boiling-point.

"Dr. Raymond has made the suggestion that the addition of caustic alkali would possibly precipitate some of the mineral ingredients found in these waters, thereby changing their chemical composition sufficiently to affect the point of ebullition. At the same time he remarks that the geyser-waters are probably too dilute solutions to be much influenced by such additions. Anyone who glances at the analyses of the waters of the Bee-Hive, Fountain, and Fearless, must see, I think, that they are not only too dilute to undergo any marked change of temperature, but that the mineral constituents consist mainly of the carbonates and chlorides of the alkalies, associated with a relatively large amount of free silica which would remain unacted upon by caustic alkali. There is nothing in the waters to be thrown down by the addition of alkali, or permit any chemical combinations to be formed by the addition of a small amount of soap. The desire of tourists to "soap a geyser," during their trip through the park, grows annually with the increase of travel, so much so that there is a steady demand for the toilet soap of the hotels. If visitors could have their way, the beautiful blue springs and basins of the geysers would be "in the suds" constantly throughout the season. Throwing anything into the hot springs is now prohibited by the

Government authorities. It is certainly detrimental to the preservation of the geysers, and the practice can not be too strongly condemned by all interested in the National Reservation."

This route, with Fire Hole Basin as a center, brings the tourist near the leading attractions.

From Fire Hole Basin—

The Falls of the Madison are six miles.

Foot of Madison Cañon, eighteen miles.

Falls and Cañon of the Gibbon, ten miles.

Monument Geyser, eighteen miles.

Midway Geyser Basin, or "Hell's Half Acre," three miles.

Upper Geyser Basin, eight miles.

Yellowstone Lake, twenty-five miles.

Yellowstone Falls and Cañon, thirty-two miles.

Remember this route, via the Union Pacific Railway from either Council Bluffs or Kansas City, via Cheyenne, Green River, Granger, and Pocatello, to Beaver Cañon, and thence via stage to Fire Hole Basin.

At Beaver Cañon conveyances of any description can be obtained, baggage wagons, tents, camp outfit, bedding, and provisions. It will be found pleasanter and more economical to make up a party of four or six for the trip. It will take a camping party ten days to thoroughly do all the many points of interest in the park, including a return trip to the Lower Basin. There is very fine hunting and fishing between Beaver Cañon and the Lower Basin, and all along the line of march.

### HOW THEY SAW IT.

The practice of presenting testimonials which bear witness to the scenic beauties of a railway route, is, as a rule, to be deprecated; but, from among the thousands received by this department, the two following are selected because they fairly illustrate the feelings of every tourist who has visited that enchanted ground—the Yellowstone National Park.

(FROM REV. DR. J. E. HURLBUT.)

SALT LAKE CITY, July 1, 1889.

We have to thank you for a very pleasant trip to that wonder of wonders—the Great Yellowstone Park; my entire party are enthusiastic in their loud praises of every feature of the trip.

We left Salt Lake City at 6 o'clock a. m., via the Utah & Northern Division of the Union Pacific Railway, and after a delightful ride by the side of the Great Salt Lake, and through Salt Lake and Cache valleys, we reached Beaver Cañon at 6.30 p. m.

In Bassett Bros, we found men who gave us a good bed at their hotel, the best of food, and every accommodation we could ask for. Their drivers are very accommodating, and add very much to the enjoyment of the trip.

The morning after our arrival we left for the park, driving through an open country. The streams are full of trout; and game is abundant, from bear and antelope to grouse and snipe. After three or three and a half hours' drive, we reached Hancock's, where we got a fine dinner. Driving four hours more, we reached Snake River, where we found very restful beds and appetizing food at the hotel there.

The next day's drive is through the pine woods; game is still plenty.

A ride of four hours brings us to Tyghee Station, where a dinner of extra quality awaited us. Another ride of five hours, and we were landed at Fire Hole in the park. For the last three hours of this part of the journey, we were in the park limits; and in crossing the Madison Divide, we enjoyed the finest extended view to be found in the Yellowstone country.

From Fire Hole Basin, we went to the Upper Geyser Basin, passing through "Hell's Half Acre," and visiting Excelsior Geyser, the largest in the world, but not now active; and returned to Fire Hole that night.

The wonderful geysers are seen during this part of the journey—"Old Faithful," that, once an hour, spouts from three to five minutes, throwing a huge stream to the height of 150 feet; "The Castle," whose loud roar gives him a noisy reputation; "The Splendid," which, every three hours on alternate days, throws a stream 200 feet high; and numerous others of lesser note.

The following day we left Fire Hole, and, in a drive of three hours and a half, visited Gibbon Falls and Cañon, Monument Geyser Basin, Gibbon Paint Pot Basin, taking dinner at Norris Basin; and, after a three hours' drive after dinner, reached Mammoth Hot Springs, where we found the largest hotel in the park. On our way, we passed Beaver Lake and the Volcanic Glass Cliffs, and through the Golden Gate, where the skill of an engineer has nailed the road to the side of the cliff.

Returning the next day, we visited the Grand Cañon and the Falls, and every one agreed with me that they are by far the grandest sights in the park.

The next morning we returned to Fire Hole ready to come out, having seen the park as it should be seen.



No one who is so near to the Yellowstone as Salt Lake City can afford to miss an opportunity to visit this wonderful spot.

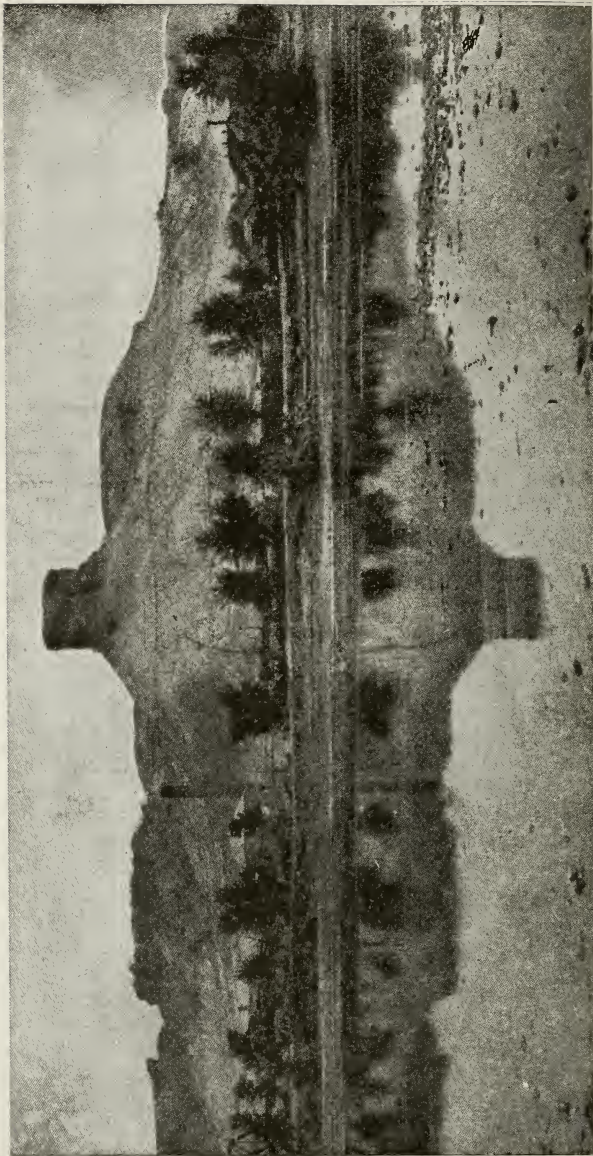
Again we thank you for helping us to make a trip that will never be forgotten by any of us.

(Signed)

J. E. HURLBUT,  
MISS HALL,  
MISS BLODGETT,  
MISS MERRIL,  
MISS BAKER,  
MISS HUNT,  
MISS MASON, and others.

(FROM MR. GEORGE N. SMITH, INDIA.)

DEAR SIR:—Many thanks for your kindness and courtesies and that of your people from Beaver Cañon, in and through the Yellowstone Park. The journey from the cañon is through a very pleasant country and good road; the hotels on the way are patterns of cleanliness and good food; such mountain trout it has never been my good fortune to meet before; and as for the hostelry at Snake river, a sight of the picturesque location would pay for the journey if there was nothing more to be seen. You come upon it so unexpectedly; the river flows close to the door; behind, a dark green pine forest; beyond the river and the uplands, the giant mountains raise their snowy summits. But who can tell the wonders of the park? It was a true report I heard in my own country (India); but the half was never told. Time would fail to tell, had I the ability, of the wonders of the geysers, the exquisite tints of the hot springs, the marvels of the "Formations," and last but not least, the combined grandeur and beauty of the Grand Cañon of the Yellowstone; gallant "Old Faithful," ever ready to repay the tourist for his journey, by displaying his glorious inverted cataract. The others are rightly named: Grand, Splendid, Giantess, etc. But my affections cling to the "O. F." Listen, the sixty-five minutes are nearly up, wanting only four. Here comes the steam, then a couple of buckets of water; these premonitory symptoms are hardly given, when, look out, here it comes! Then Nature displays one of her superlatively grand exhibitions; a column of water 150 feet, instinct with life; wave after wave of water pursuing each other upwards in obedience to some mysterious law, setting gravitation at defiance. The Irishman who deprecated his friend's admiration of Niagara by exclaiming: "What's to prevent its descent!" would find himself at fault here. Clouds and streams envelop it, thunder accompanies it, and scattered from it 10,000 diamonds fall on every side; but there, I must not belittle it by causing it to be imagined through the refracting medium of my description; it must be seen to be appreciated; it should be seen again and again till its grandeur



GREEN RIVER BUTTES, WYO. On the Union Pacific Ry.

fills the soul. I should be accused of exaggeration and romance if I attempted to tell of the coloring of the many springs—the Morning Glory, the Gem, the Emerald—so I give it up.

I am exceedingly thankful that it fell to my fortune to see these wonders with my own eyes, and the whole made so pleasant by the amiability of all concerned in the transport.

Yours truly,

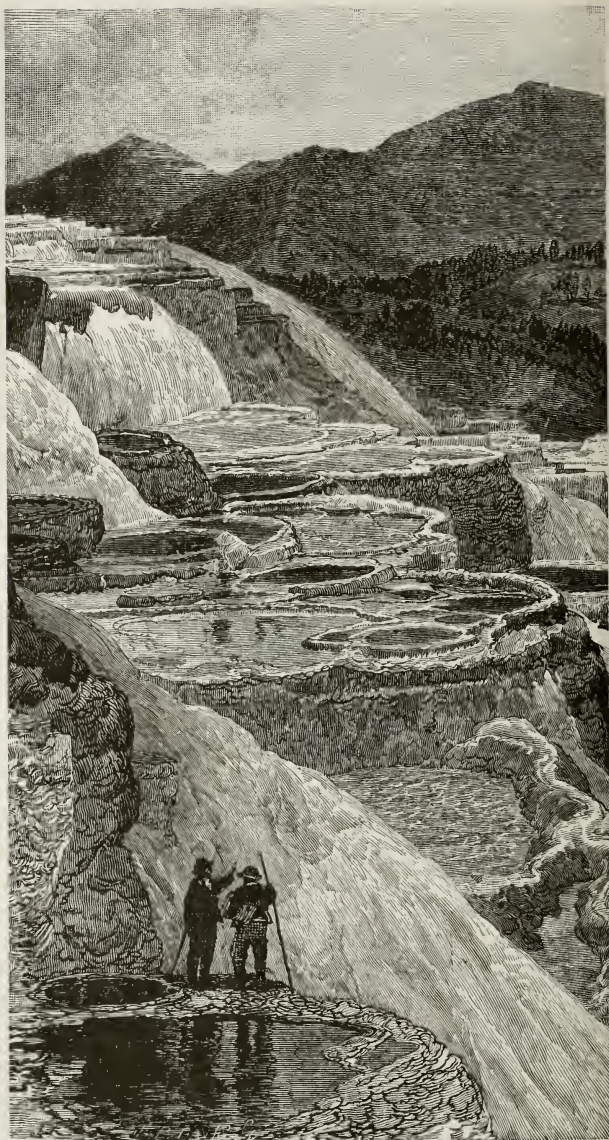
GEO. N. SMITH.

The Fourth Tour is from Pocatello to Butte and Helena and return. From Pocatello going due north we pass Beaver Cañon, where connection by stage line is made for the Yellowstone National Park; a few miles bring the tourist within the confines of Montana. Passing the water line, Red Rock Station is the first point of interest. Here the scenery is wild, and there is a peculiar formation of points of jagged land, the highest of which is Red Rock, which juts up some 500 feet, and may be seen in either direction for twenty miles. Then through Dillon, which is in Beaver Head Valley, and one of the thriving towns of Montana, Silver Bow is reached. From Silver Bow the Montana Union Railroad, an auxiliary line of the Union Pacific Railway, branches off, one spur running to Butte City, another through Stuart to Garrison, where connection is made for Helena, and still another from Stuart to Anaconda.

### BUTTE CITY.

Butte City, with an elevation of 5,492 feet above sea-level, is the largest mining camp in the world, not even excepting Leadville, Colorado. Standing next to the Lake Superior regions in the production of copper, and first of all in silver output, attention has been drawn to it from all over the world. Butte has a population of some 25,000 people, is the possessor of fine hotels and all the modern conveniences of a large city. It is the greatest silver producer, not alone of Montana, but of the Rocky Mountain mineral belt. It is situated on a gentle slope, and is surrounded by rugged and beautiful scenery, and takes its name from the point known as the Big Butte, located just north of the original town. It is ten miles to the main range of the Rockies, but towering foothills have formed the basin where Butte flourishes. From Butte City, points of interest in Silver Bow, Jefferson and Madison





GARDINER RIVER HOT SPRINGS, YELLOWSTONE NATIONAL PARK.

Reached via the Union Pacific Rv.



counties can be readily reached. Butte is a healthy place, and blessed with a pure and bracing atmosphere. Butte City presents many attractions to the tourist and health and pleasure seeker.

### ANACONDA.

From Stuart, the Montana Union also has a branch to Anaconda. Here is located the largest smelting works in the world, the consumption of coal alone for these works being 300 tons per day, and the yield from copper ore is enormous. From Stuart, the pretty little town of Deer Lodge is but a short distance, and is a point of much interest.

### GARRISON.

Further on is Garrison, a place of note, being the junction of the Montana Union branch of the Union Pacific Railway with the Northern Pacific, and formerly the transfer point of passengers going to Portland. But since the opening of the Oregon Short Line, the Route is via Huntington, which is the direct line to Portland; the Garrison Route is used for Helena business.

### HELENA.

Helena the capital of Montana, has an elevation of 4,266 feet above the sea-level, and a population of about 20,000. Helena, besides being a great distributing point, is also a mining camp, and is reached over the Union Pacific Railway, via Garrison, and the Northern Pacific Railroad. It is beautifully situated; Fort Benton to the north, Bozeman to the east, Virginia City to the south, with Butte City and Deer Lodge to the west. It has fine hotels, clubs, banks, newspapers, street cars—in fact everything that contributes to city life.

The circumstances attending the birth of Helena are interesting. Four young miners whose names are not associated with the city's later history, in May, 1864, were wandering along the main range prospecting. They had been unable to obtain claims in Alder Gulch, and their objective point, in case they should fail to strike a rich field of their own, was Kootnai, in British Columbia, where common report located valuable diggings. They camped one

night in the gulch where Helena stands to-day, but though they found "color" they were not particularly pleased. They doubted if gold was there in anything like paying quantities. They pushed ahead, therefore, crossed the range, and had gone as many as thirty miles northward when they encountered a man who dispelled their dreams of Kootnai. He said the good claims were all gone, and the best of them were poor, anyhow. This news was a great discouragement to the party. They had a rather dismal council, and concluded that the gulch they had lately left was their only hope. Accordingly, the next morning they turned around and came back to the spot upon which they had previously encamped. They grimly named the valley "Last Chance Gulch," and Last Chance Gulch it is to-day. They sank two holes to bedrock, and their hearts leaped high when they counted \$3.60 in their first pan. Each of these four adventurers made a fortune from his claim, and soon a big camp was drawn together. One of the miners, who had been impressed with the fascinations of Homer's heroine, gallantly urged the name of Helena as most appropriate for the name of the new city, and Helena it became.

It stands to-day in the bottoms where the Last Chance pilgrims made their first discoveries. A more absurd and yet more picturesque situation would be difficult to fancy. Its chief business thoroughfare lies directly in the bottom of the Last Chance Gulch; at the further end of which, the patient Chinaman is still washing out his pan of dirt and realizing a fortune larger than, in his own country, he had ever dreamed of achieving. Thirty millions were taken from Last Chance Gulch before it was abandoned to merchants and shopkeepers, and even now the builder of a new house can find laborers willing to dig his cellar for the dirt they take from it. There are many attractions for the tourist. Mount Helena is to be climbed, and the view from its summit well repays the labor. There are pleasant drives, one of the most popular leading to Hot Springs, four miles away. Prickly Pear Cañon presents attractive features. "The Gate of the Mountains," where the Missouri river bursts through, infinitely surpasses the Hudson Highlands, and for 100 miles down stream there is a succession of pillared hills, of castles, of eroded stone, of caves, and of falls. East of Helena are the White Sulphur Springs, Hell

Gate Cañon, and the Devil's Watch Tower. Northwest is Flat Lake, twenty-eight by ten miles, and the Twin Cascades, Elizabeth and Alice, falling 2,000 feet. The return trip is made to Pocatello, where the tourist once more joins the Short Line Division of the Union Pacific. From here the journey is resumed to Oregon, the Dalles of the Columbia, Portland, Tacoma, and Alaska.



# STANDARD PUBLICATIONS

BY THE

## PASSENGER DEPARTMENT OF THE UNION PACIFIC RAILWAY.

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The Passenger Department of the Union Pacific Railway will take pleasure in forwarding to any address, free of charge, any of the following publications, provided that with the application is enclosed the amount of postage specified below for each publication. All of these books and pamphlets are fresh from the press, many of them handsomely illustrated, and accurate as regards the region of country described. They will be found entertaining and instructive, and invaluable as guides to and authority on the fertile tracts and landscape wonders of the great empire of the West. There is information for the tourist, pleasure and health seeker, the investor, the settler, the sportsman, the artist, and the invalid.

**The Western Resort Book.** Send 6 cents for postage.

This is a finely illustrated book describing the vast Union Pacific system. Every health resort, mountain retreat, watering place, hunter's paradise, etc., etc., is depicted. This book gives a full and complete detail of all tours over the line, starting from Sioux City, Council Bluffs, Omaha, St. Joseph, Leavenworth, or Kansas City, and contains a complete itinerary of the journey from either of these points to the Pacific Coast.

**Sights and Scenes.** Send 2 cents postage for each pamphlet.

There are five pamphlets in this set, pocket folder size, illustrated, and are descriptive of tours to particular points. The set comprises "Sights and Scenes in Colorado;" Utah; Idaho and Montana; California; Oregon, Washington, and Alaska. Each pamphlet deals minutely with every resort of pleasure or health within its assigned limit, and will be found bright and interesting reading for tourists.

**Facts and Figures.** Send 2 cents postage for each pamphlet.

This is a set of three pamphlets, containing facts and figures relative to Kansas, Nebraska, and Colorado respectively. They are more particularly meant for intending settlers in these fertile States and will be found accurate in every particular; there is a description of all important towns.

**Vest Pocket Memorandum Book.** Send 2 cents for postage.

A handy, neatly gotten-up little memorandum book, very useful for the farmer, business man, traveler, and tourist.

**Calendar, 1890.** Send 6 cents for postage.

An elegant Calendar for the year 1890, suitable for the office and counting room.

**Comprehensive Pamphlets.** Send 6 cents postage for each pamphlet.

A set of pamphlets on Colorado, Wyoming, Montana, Utah, Idaho, Oregon, and Washington. These books treat of the resources, climate, acreage, minerals, grasses, soil, and products of these various empires on an extended scale, entering very fully upon an exhaustive treatise of the capabilities and promise of the places described. They have been very carefully compiled, and the information collated from Official Reports, actual settlers, and residents of the different States and Territories.

**Theatrical Diary.** Send 10 cents for postage.

This is a Theatrical Diary for 1890-91, bound in Turkey Morocco, gilt tops, and contains a list of 255 theatres and opera houses reached by the Union Pacific system, seating capacity, size of stage, terms, newspapers in each town, etc., etc. This Diary is intended only for the theatrical profession.

**Commercial Salesman's Expense Book.** Send 2 cents for postage.

A neat vest pocket memorandum book for 1890—dates, cash accounts, etc., etc.

**Outdoor Sports and Pastimes.** Send 2 cents for postage.

A carefully compiled pamphlet of some thirty pages, giving the complete rules of this year, for Lawn Tennis, Base Ball, Croquet, Racquet, Cricket, Quoits, La Crosse, Polo, Curling, Foot Ball, etc., etc. There are also diagrams of a Lawn Tennis Court and Base Ball diamond. This pamphlet will be found especially valuable to lovers of these games.



**Map of the United States.** Send 25 cents for postage.

A large wall map of the United States, complete in every particular, and compiled from the latest surveys; just published; size, 46x66 inches; railways, counties, roads, etc., etc.

**Stream, Sound and Sea.** Send 2 cents for postage.

A neat, illustrated pamphlet descriptive of a trip from The Dalles of the Columbia to Portland, Ore., Astoria, Clatsop Beach; through the Strait of Juan de Fuca and the waters of the Puget Sound, and up the coast to Alaska. A handsome pamphlet containing valuable information for the tourist.

**Wonderful Story.** Send 2 cents for postage.

The romance of railway building. The wonderful story of the early surveys and the building of the Union Pacific. A paper by General G. M. Dodge, read before the Society of the Army of the Tennessee, September, 1888. General Sherman pronounces this document fascinatingly interesting and of great historical value, and vouches for its accuracy.

**Gun Club Rules and Revised Game Laws.** Send 2 cents for postage.

This valuable publication is a digest of the laws relating to game in all the Western States and Territories. It also contains the various gun club rules, together with a guide to all Western localities where game of whatsoever description may be found. Every sportsman should have one.

**"The Oldest Inhabitant."** Send 10 cents for postage.

This is a buffalo head in Sepia, a very artistic study from life. It is characterized by strong drawing and wonderful fidelity. A very handsome acquisition for parlor or library.

**Crofutt's Overland Guide, No. 1.** Send \$1.00.

This book has just been issued. It graphically describes every point, giving its history, population, business resources, etc., etc., on the line of the Union Pacific Railway, between the Missouri River and the Pacific Coast, and the tourist should not start West without a copy in his possession. It furnishes in one volume a complete guide to the country traversed by the Union Pacific system, and can not fail to be of great assistance to the tourist in selecting his route, and obtaining complete information about the points to be visited.

**A Glimpse of Great Salt Lake.** Send 4 cents for postage.

This is a charming description of a yachting cruise on the mysterious inland sea, beautifully illustrated with original sketches by the well-known artist, Mr. Alfred Lambourne, of Salt Lake City. The startling phenomena of sea and cloud and light and color are finely portrayed. This book touches a new region, a voyage on Great Salt Lake never before having been described and pictured.

**General Folder.** No postage required.

A carefully revised General Folder is issued regularly every month. This publication gives condensed through time tables; through car service; a first-class map of the United States, west of Chicago and St. Louis; important baggage and ticket regulations of the Union Pacific Railway, thus making a valuable compendium for the traveler and for ticket agent in selling through tickets over the Union Pacific Railway.

**The Pathfinder.** No postage required.

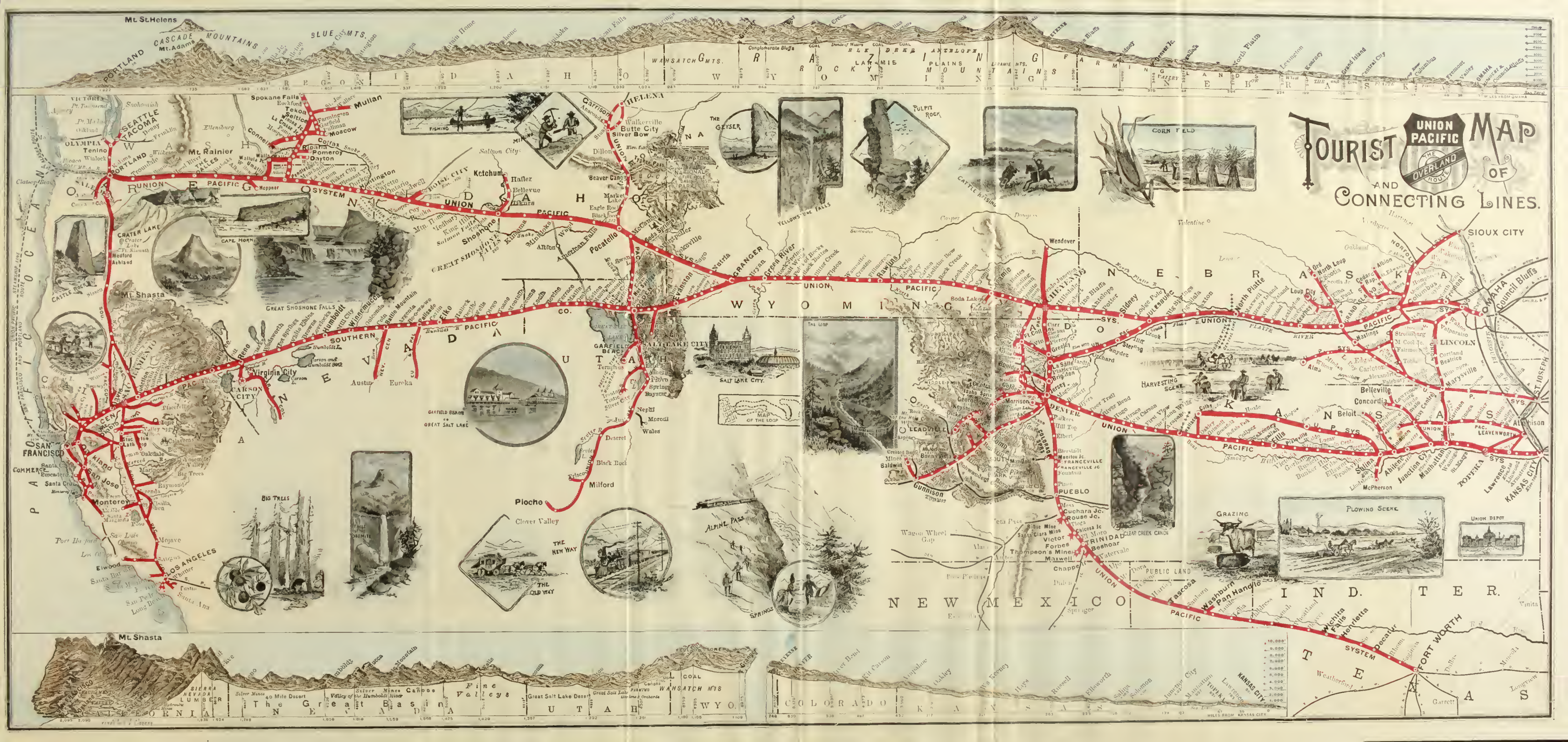
A book of some fifty pages devoted to local time cards; containing a complete list of stations with the altitude of each; also connections with western stage lines and ocean steamships; through car service; baggage and Pullman Sleeping Car rates and the principal ticket regulations, which will prove of great value as a ready reference for ticket agents to give passengers information about the local branches of the Union Pacific Railway.

**Alaska Folder.** No postage required.

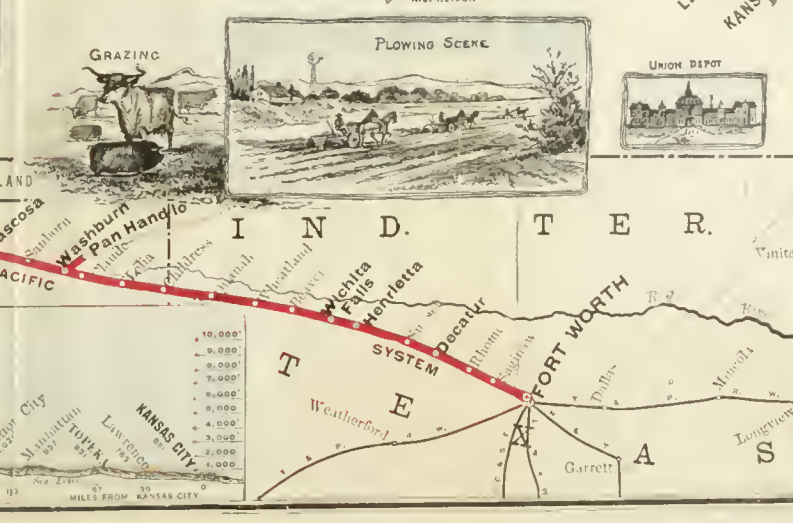
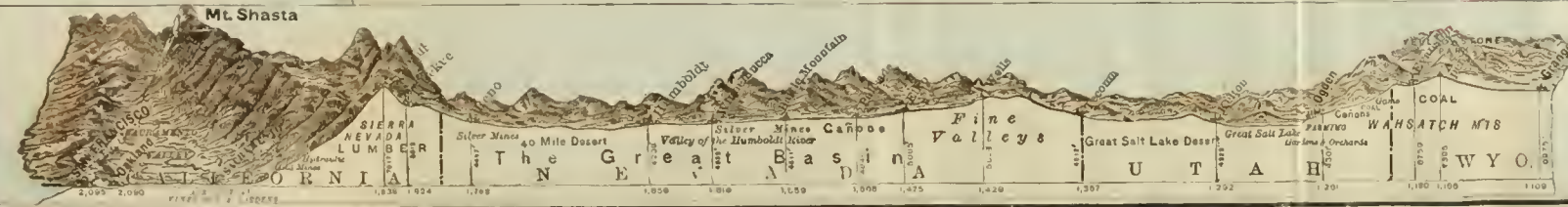
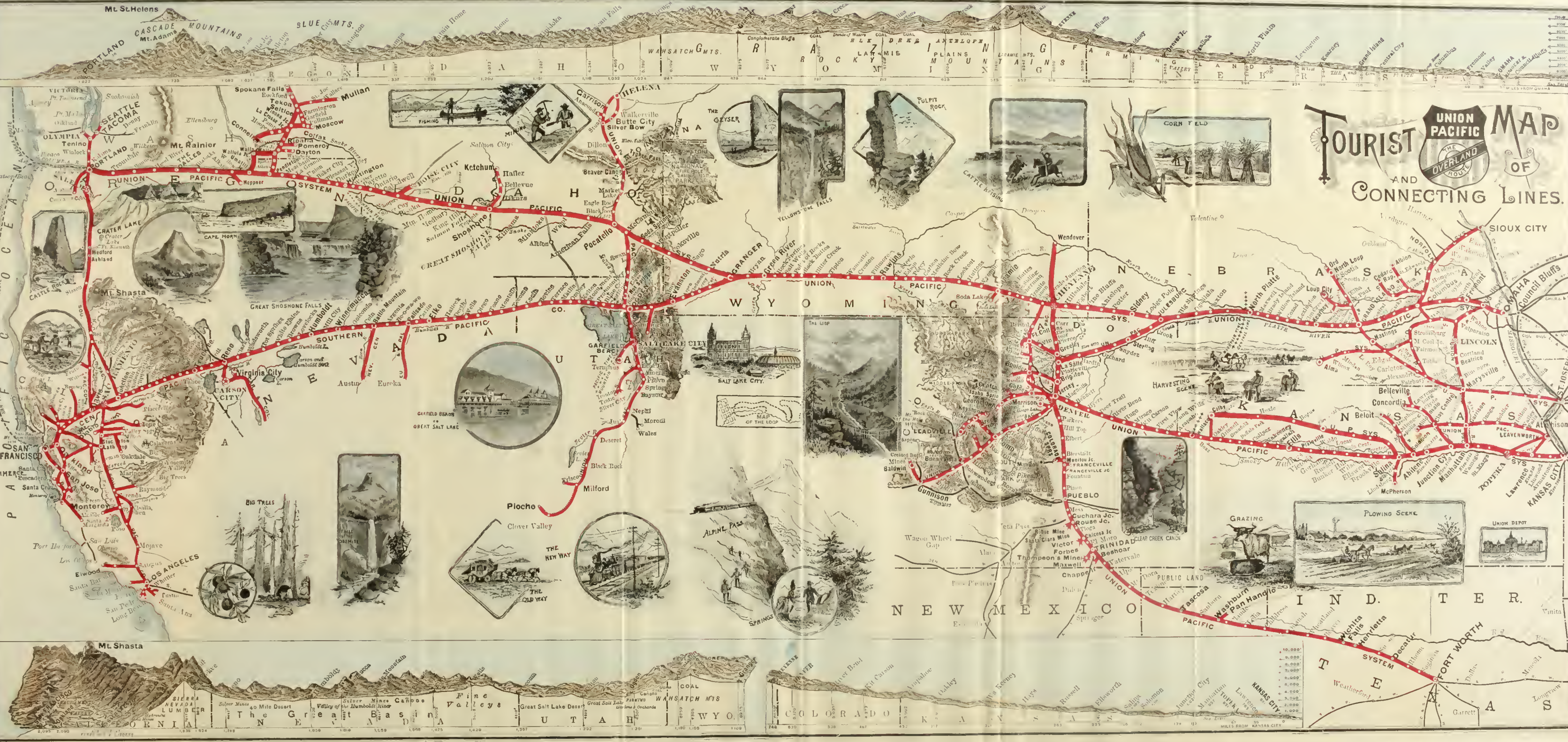
This Folder contains a brief outline of the trip to Alaska, and also a correct map of the Northwest Pacific Coast, from Portland to Sitka, Alaska, showing the route of vessels to and from this new and almost unknown country.







# TOURIST UNION PACIFIC MAP OF AND CONNECTING LINES.





# IDAHO AND MONTANA.



GREAT SHOSHONE FALLS

## SIGHTS AND SCENES

*For the  
Tourist*

J. W. SCOTT,  
ASST. GEN'L PASS'R AGT.,

E. L. LOMAX,  
GEN'L PASSENGER AGENT

OMAHA, NEB.

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